Vol 5 No 8

# The Australian COMMODORE and AMIGA REVIEW

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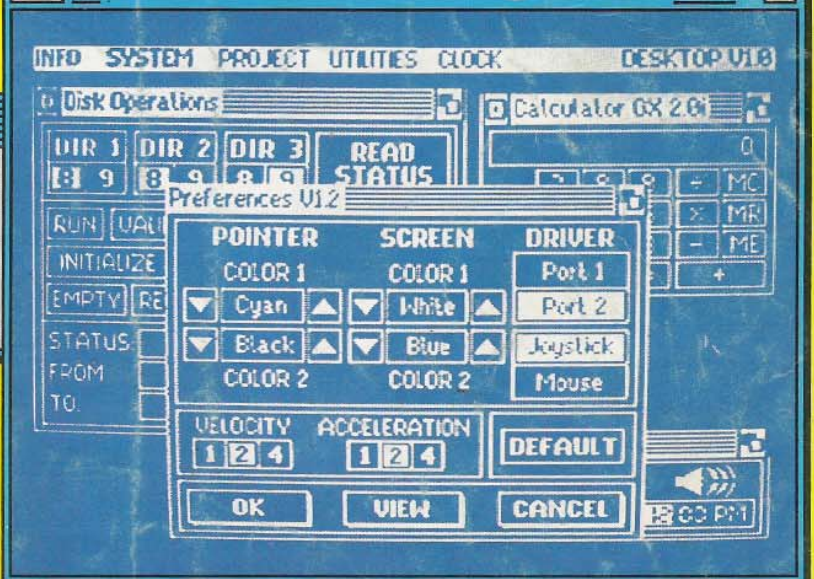
**Regulars**

*Adventurer's Realm*
*Machine Code Tutorial*
*Design Your Own Operating System*

Australian Amiga Review between pages 20 - 21

## Final Cartridge III




The Alternative to GEOS ?

**Games**

Echelon
Up Periscope
Stealth Mission

**Graphics**

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Slideshow Creator

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# FINALLY!!

# THE FINAL CARTRIDGE III

## KEEP IT SIMPLE!

- Easy to use **WINDOWS** and **PULL DOWN** menus.
- Select with either **JOYSTICK, KEYBOARD** or **MOUSE**.
- Operates with 1350 Mouse, 1351 Mouse (In Joystick mode) or **NEOS MOUSE** (in either Joystick or **TRUE MOUSE MODE**).
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- Built-in calendar.
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## MAKE IT EASY!

- **RENUMBER - AUTO - DELETE - OLD - MEM HELP - KILL - FIND - REPLACE - DSAVE - DUMP - DLOAD - DVERIFY - DOS - DAPPEND - ARRAYS.**
- **DLIST (LIST** to Printer).
- **PDIR** (List directory to printer).
- Many many more.
- Backup to tape or disk.
- Disk turbo at up to 25 times faster.
- Backups reload independently.
- Machine code monitor.
- Machine code assembler.
- Machine code disassembler.
- Hex to decimal conversion.
- Decimal to Hex conversion.
- Programmed function keys.
- Kill sprite to sprite collisions.
- Kill sprite to background collisions.
- Transforms a normal joystick to an auto fire hi-speed Joystick.
- Never blow up your computer again by changing port while it's turned on. Cartridge "change ports" for you through software.
- User definable scales for screen dumps (e.g. six times wider).
- All basic extensions available from pull down menus.
- Monitor also operates in **DRIVES MEMORY**.

## P-ACCESSORIES FROM P-ACTRONICS

We have a great new Disk Box called the DS60L. This brilliant idea has removable individually coloured compartments for 10 disks at a time and is undoubtedly the most important innovation in Disk Boxes in years.

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# Arcade Classics

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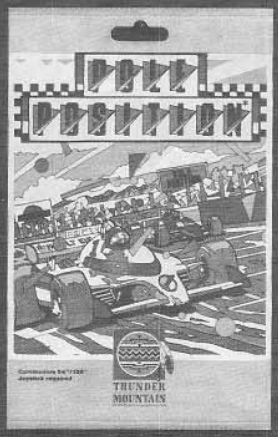


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Jr. Pac-Man™

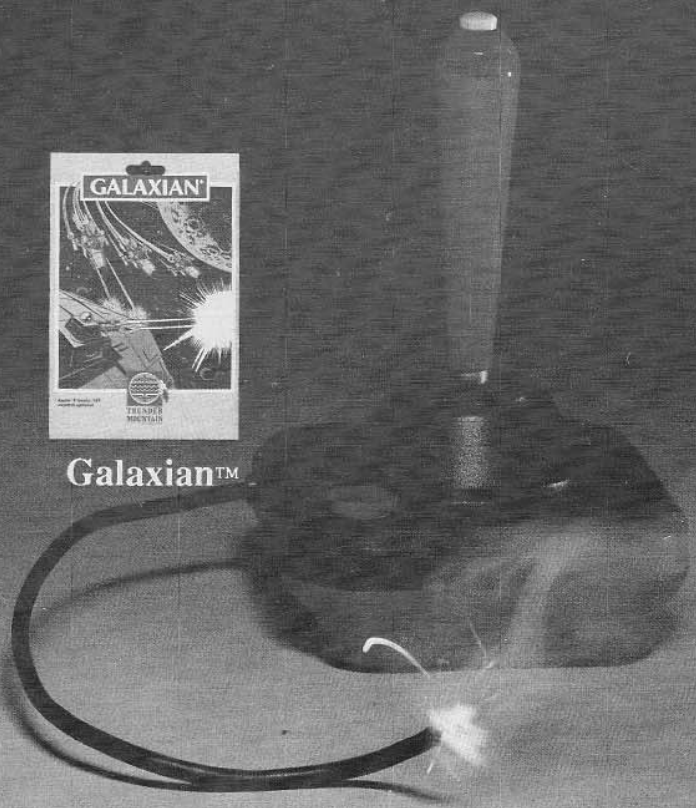



Galaxian™

MS. Pac-Man™

Pac-Man™

Dig Dug™



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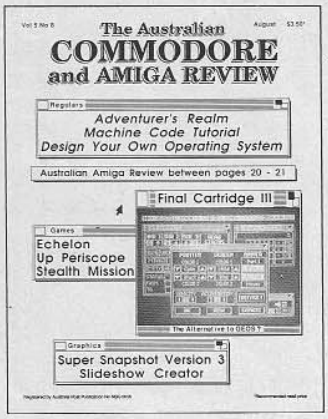
# The Australian COMMODORE and Amiga Review

VOL. 5 NO. 8 August 1988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# Editorial

IT HAD TO HAPPEN eventually. It has taken over four years. Yes folks, our cover price has finally risen from the original amount of three dollars, to three dollars and fifty cents. A small hike, that was long due. Our publication was originally a mere 32 pages. Since then, we've grown to 72 pages as of this issue - that's including our Amiga section.

For the moment, we plan to keep the Amiga section as an integral part of the *Australian Commodore and Amiga* review. The feeling is that a large number of C64 owners will be upgrading over the next 18 months, so no doubt all those expectant owners will be interested to read about what's new in the Amiga community.

There's still no easy way to make the step up. However, there are some excellent offers currently running if you're considering purchasing an Amiga 500 - such as the Megapack. Selling your C64 should be no problem. Which brings me to another interesting point.

Although it is true that many C64ers are upgrading, they are selling their gear to new computerists. The result is an expanding market in both departments. So, the C64 is still accepted as the most inexpensive way to get into computing - with by far the largest software library for a machine of its type in the world.

Over coming months we plan to run a series of articles capturing the best of the best for the C64. We'll be looking at subjects such as speeding up your 1514 - comparing all the alternatives, printshop type packages - there are a few new ones in the pipeline, and a close up of cartridges such as the Freeze Machine, Final Cartridge III (reviewed in this issue), Mach 5 and Action Replay. There have been so many additions made, it's probably about time we go back and see which one was the best of the bunch.

If you're keen to share some experience with us on any particular package - such as the way Eric Holroyd did with *Easy-Script* - we would love to hear from you. For details call (02) 817 0011. Ask for a copy of our guide to writing for the magazine. ■

***Andrew Farrell***


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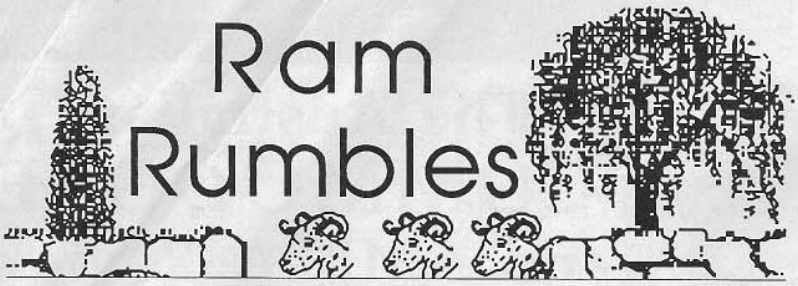
# Ram Rumbles



## Commodore connection

Viatel users should take note that node 6420 is now undergoing a revamp. The Commodore Connection is a closed user group of dedicated C64 and Amiga users. Membership is free.

The area is managed by Greg Symons and his partner Syf Watson (better known to some as Wombat). They are keen to see their ranks grow, so if you own the techno-coloured 1200/75 service, why not drop them a line.

Future plans include special mail-order frames, and also excerpts from the *Australian Commodore and Amiga Review*. It could be a once in a life chance to chat with C64er's in some pretty remote areas. The guys promise us that they have actually got a member in Groote Eylandt. ■

## Games renaissance

We've been preaching the virtues of the C64 for nearly five years now. Some of us thought our little friend would never enjoy such a long and full life. And true enough, changes are happening. One US magazine recently described the trend as a sort of renaissance period.

Why so? Well, development is now taking place, as it has been for some time, on larger machines. The result means more complex programs - especially games. However, the real kick is the fact that graphics are also now developed on larger machines such as the Amiga and then ported down to the C64. Packages such as *Deluxe Paint II* are enabling games designers to stretch their drawing skills to the limits. ■

## User groups - please register

Work is still continuing on our next *Commodore Annual*. However, we have yet to complete our User Group listing. We would very much like to hear from all groups, to confirm existing details, or register newly operating organisations. Please call (02) 817 0011 with your details so that we can enter them into our database. The complete listing will appear in the Annual - however keep in mind that we often get calls from users seeking out a User Group nearby - so it pays to be registered. ■

## ADOS to stay?

Users of our disk magazine, *Suite 64*, have commented that they really like our new "point and click" menu system. However, the comment was also made that we seem to keep changing things. Fair enough, we have changed the menu system a number of times, but this time it's here to stay. ADOS will be the format we stick to on all disk magazines from issue number ten onwards.

We do hope to make improvements on the system, and on that note invite your comments and criticisms. Issue 11 is out now - check out the advertisement in this issue.

On it you'll find :

Utilities — 80 column screen for your C64.

Graphic converter program to transfer between formats. BASIC enhancers included a line deleter and definable function keys.

This month we also have included a complete pack of DOS utilities including:-

Disk directory fix program.

Disk searcher.

Disk tidier - to cleaned up those full disks.

Disk drive head alignment program.

Disk Doctor - to help to salvage problem disks.

In the general interest section we have also included Graeme Winterflood's program for calculating the distance between any two points on the globe.

Geos Upgrades have been included this month so that you can easily fix up your version of GEOS so it supports all the latest updates.

We have a JIGSAW program that we think that you will enjoy and have also included several pictures that you can put back together.

In the educational realm we have included some of the highlights from our very own H.S.C. survival kit - we hope that these programs will help those who are studying hone their knowledge.

All this along with our usual collection of demo programs featuring fantastic graphics and sound. ■

## Australian programs wanted

If you've written something interesting, and would like to see your program sold as part of an Australian disk magazine in the USA, give Prime Artifax a call on (02) 817 0011. As of this month, they have launched Australia's first disk magazine in North America. Initial response has been very encouraging. So they're now looking for more programs. Let's see what talent Australia has to offer!

■

## BASIC programmer WANTED

From time to time, our columnists come and go. At the moment a few have just gone - across to our Amiga section. So we're now looking for writers. We would especially like to hear from a well versed BASIC programmer to provide a regular tutorial on the topic, right from

PRINT and INPUT, to PEEK, POKE and Boolean algebra. If you think you can help, and consider yourself an easy to understand writer, contact the Editor as soon as possible. ■

## Datel products in Australia

Westend Computers are now importing a vast range of the Datel product line, however, they're keen to know what else you're interested in that's not here already. If you can help, ring them on (03) 350 5144. ■

## Amiga makes life better for young cancer victims

A COLOURFUL computer is playing a major role in making a stay in hospital more pleasant for children with leukemia and other forms of cancer in Camperdown Children's Hospital.

The Amiga 2000 computer was presented to the hospital by Legal & General as part of a $20,000 bicentennial program to provide children's hospital wards throughout Australia with "extras" to make life easier for the children and their parents.

Legal & General's NSW State Manager, Mr. Don Ritchie, who recently presented the computer to Camperdown Hospital said: "Although they may seem small in themselves, the gifts will help make the long and uncomfortable days that the children - aged from one year to 18 years - spend in the wards easier."

Dr Michael Stevens, head of the oncology unit at Camperdown, said the hospital cares for more than 600 children from all over Australia and the South Pacific.

"These children receive up to two years intensive chemotherapy, plus surgery and radio therapy in fairly arduos programs.

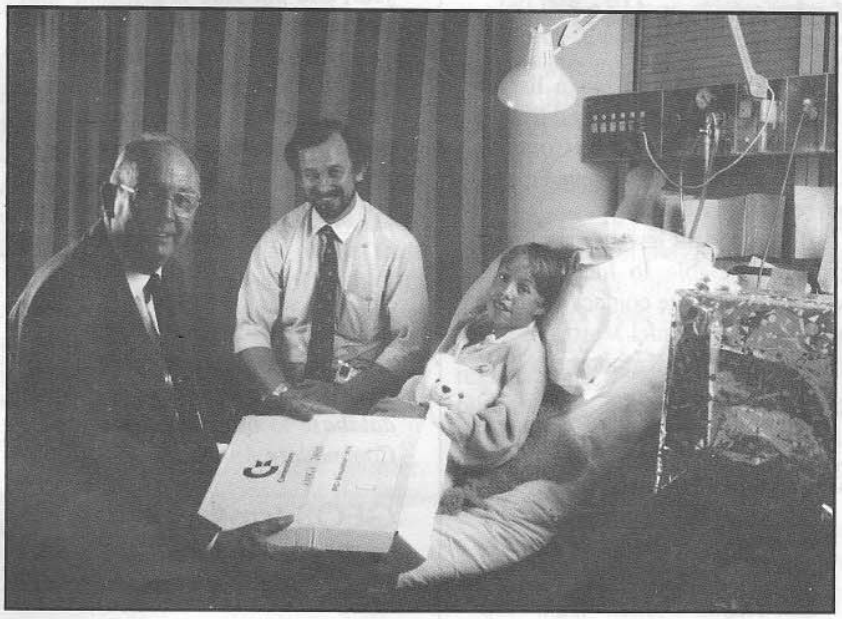
"Our results are encouraging and more than half are permanently cured of cancer," he said.

"Although most treatment is on an outpatient basis, many young patients have to spend long - and often unpleasant - times in hospital for longer courses of chemotherapy and other treatment.

"It is these patients who are the sickest and who need the most distraction who are delighted with the computer and the diversion it provides.

"There is also the prospect of educational use for children in hospital for long periods," Dr Stevens said.

The Legal & General program is providing similar happiness to other capital city hospitals, each of which is selecting the items it most needs. ■



# Update

Most of you would recognize Pactronics as being a major supplier of business, utility and educational software, and many peripherals and accessories like cartridges, graphics mice, joysticks, disk boxes etc.

Now however, we have set ourselves a target to become a major force in entertainment software. Not, I hasten to add, of cheap, poor quality, "here today, gone tomorrow" games but concentrating on quality products that will be value for money, enjoyable, and give pleasure for a longer period of time.

An example is *Time and Magik* which the games reviewer in last month's *Commodore Review* was kind enough to give "99" out of "100". Other games of long term interest that are now available for Commodore and PC are *Classic Quest Adventure Games*, which from beginning to end will keep you enthralled for many months, and *Impact*, an arcade style game in the mode of *Arkanoids*.

Amiga games include *Impact* and *Time and Magik* and we will shortly have *Arkanoids II*, *Zoom*, *Mach II*, while for the PC we currently have those perennial favourites *Perry Mason*, *Fahrenheit 451*, *Starquake*, *Impact* and some great titles on the way. They should all be in your stores within the next four weeks or so, so keep asking.

We will not, of course, neglect our educational software side of the business which is undoubtedly one of our major divisions, and in fact hope to have news of a new range of product made here in Australia. Please keep an eye on our advertisements for further thrilling details.

**SYNMH**

Advertisement

# LETTERS

## TO THE EDITOR

### 1581 drive

Have you heard about the 3.5 inch 800k disk drives for the C64/C128? I have seen them advertised in US magazines but have not seen them in Australia. Is it possible to run the US drives on 240v 50hz?

Phil Tumber,
Mascot, NSW

*Ed: The 1581 drive would really open up the world for the C64 and C128. However, the power supply conversion to have them running on our voltage is too costly so Commodore Australia are not handling them. It is a shame!*

### Software reset on tape?

In your last issue, Vol 5 No 6, Shadow of Ratt put in a program to Reset Software. I typed it in on my computer, a Commodore 64 and not knowing what it really meant, I ran it and it said 'device not present', I knew this meant that you didn't have a disk-drive or a printer, so is it possible to change this to datasette (because that's what I have)?

Adam Pollock
Talbot, Victoria

*Ed: Just change the 8 in lines 80 and 140 to a 1.*

### Riteman C+ hassles

I buy your magazine quite regularly and although it is a great magazine, you don't include too many programs.

I am not criticising the magazine, it's just that I would like it if you could print a program in a later issue for a high res screen dump. I have tried many programs from other magazines, but they seem not to work on my printer. My printer is a Riteman C+, maybe that could be the problem.

Also I own a copy of *Printmaster* and find that it doesn't work on my C+ printer. I may need to buy a chip or type out a program before I load it.

If you could help me with this problem, I would be very grateful.

Mark Ryan,
Millicent, SA

*Ed: Programs tend to take up a lot of space and few people type them in - that's why we have a disk magazine, and only include printed programs occasionally.*

*I'm sure the Riteman is an MPS-803 compatible unit. Are you using the right printer selection? Have you tried a cartridge such as the Mach IV to do screen dumps?*

### Katoomba User Group

A while ago you ran a list of User Groups with contact addresses and since then Katoomba Commodore User Group has recieved many interesting mail items.

If you do still have a list of user groups available to businesses I would ask that the contact address be changed to Daniel Marti, 3 Minna-Ha-Ha Road, Katoomba, NSW 2780.

Many thanks for the free magazine sent to us now and then - please keep up the good work.

Daniel Marti,
Katoomba, NSW

*Ed: Thanks Daniel. We'll keep that list going on our computer - we get many calls asking for the whereabouts of User Groups.*

### Casula NSW Commodore Club

We are a club consisting of 50 members for a Commodore 64/128 computer club, we are called 'HAWKS'.

We would like to register our club with your magazine and be kept up to date with the latest software and technical changes made with the Commodore computer. We have a very successful library with a variety of software for our members to learn from basics to the latest arcade games.

We also have a Newsletter in which we communicate, as we cannot have meetings. In the newsletter we teach basics and tips on software games.

We have been together for one year, and our club is growing with more members.

Looking forward to hearing from you and guiding us to a better understanding on the Commodore 64/128 computer system.

G. Tsakonas,
Hawk Commodore Computer Club,
50 Napier Avenue,
Casula NSW 2169

*Ed: Thanks guys! Watch for a series on running a successful user group soon. We've added you to our database to be printed in our next Commodore Annual.*

### GEOS fans

Thank you for printing a 'user friendly' magazine (and more impor-

tantly, an Australian publication).

The GEOS column particularly interests us, and we would like to know if you are planning a review of the Citizen 120-D printer as it works well with this system.

Incidentally, *GEOpaint* has proved very useful for printing birthday cards.

The Adventurers' Realm is very popular in this household . . . more good reading.

A. Barnes,
Monash, ACT

*Ed: Thanks! Yes, many people are using the Citizen printer - maybe we should review it soon.*

## Super Snapshot

In the February issue of the ACR you did a review on the Super Snapshot cartridge.

At the end of it you mentioned an Australian distributor was to be announced soon.

Has one been found yet? Could you please tell me where I can get one, or even where I might be able to get one, or do I have to order one from the States?

Tony Horn
Coopers Plain, Qld

*Ed: Westend Computers (07) 221 0055 are now carrying this and many other titles previously only available from the States.*

## Pen Pal

I would very much appreciate it if you put my name down in your letters column as wanting a pen-pal from any part of the world (though Australians would be just fine). I have a disk drive, printer and a growing interest in games and utilities for the C64.

Tony Green
101 Hamilton Road
Wavell Hts, Brisbane
4012 Qld

## Golden oldies

I am 68 years gone and my dear wife has given me a subscription to the good old *Review* for my birthday, and on looking through my back copies, I find the first copy that I purchased is Vol 1 No 4, June 1984 and there is a big big difference in the magazine since then.

I started off on an old Vic 20 when they first came to be years ago, and have run my 64 for many years now. Have to keep the games up for 12 grandkids and dozens of local youngsters, but my main use is for small programming in Basic and most of all, music. Just got hold of *Bank Street Music* and it will be a great help to me from the look of it, my thanks to the Gift Giver (I know they will be reading *Review* - who doesn't).

I also use the *Speedscript* from Compute, tho' I have others, I find this as good a word pro as any and very simple to use, suits an oldy like myself very well.

I subscribe to few overseas mags but always look forward to the *Review*. By the way, when WAS the first copy ever published? I have learnt quite a bit over the years from the *Review* and even made such things as the Oscilloscope and Data Keyboard and this gave me an idea for a Pretend Mouse from I.C. Switches, and for a cost under ten dollars, I have a first rate control medium for GEOS, a darn sight better and faster than a joystick. Must send the plans in to you, I'm sure many readers would find it handy.

On the game side, my thing is Adventure (look out Michael, I need help). I do have a fair library but the trouble is to get time to play for long. I am thinking of putting an ejector-seat in front of my 64, (he he he, yuk) just press a button and I get my computer back.

At the first opportunity, I will send some of the small programs I made and you can toss em in your waste bin, it will help to fill it up, I wonder do Editors have to empy their own waste bins???

Yours at the keyboard (sometimes).

R.W. Robinson (Robie)
Eildon, Victoria

*Ed: I am sure that our readers would be very interested in such projects as the Pretend Mouse. Please do send us the plans for it - that goes for anyone who has had similar flashes of genius. Oh, our first issue was back in March 1984! Things have definitely changed.*

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# The Final Cartridge III

by Adam Rigby

WAY BACK IN 1985 we saw the beginnings of the Final Cartridge saga. Back then it was a simple BASIC enhancer with built-in monitor and reset button. The latest version spoils us with an Amiga-type workbench called Desktop, centronics printer interface, memory captures, notepad, calculator, fast loader and dozens of other goodies.

You might say that there is certainly an awful lot of software packed into the Final Cartridge III - and you're right. There is 64 Kilobytes of machine code crammed into the ROMS inside FC III - that's the same amount of RAM again as you already have in your C64.

## The desktop

The desktop is a user interface similar to the Amiga's workbench, including pull-down menus (see the front cover of this issue). There are no icons to be seen, but the basic windows and pull-down menus are there. The Desktop itself works in a very similar manner to the Amiga's Workbench, whereby you have a pointer controlled either by joystick or mouse and you can use it in conjunction with very little typing to run a program, carry out disk housekeeping, or perform simple jobs on the computer.

Surely this must be a good thing, you say, having the power of the Amiga on the humble old C64. Well, let's look at the Desktop a little closer to see what you're actually getting.

From the Desktop you have the ability to enter several menus, these include:- INFO, SYSTEM, PROJECT, UTILITIES and CLOCK.

The INFO menu contains the usual blurb about who wrote what and when and the versions of all the software that is included in the desktop package. Interestingly some programs had reached a higher version number than others.

The SYSTEM menu allows you to pick from going to BASIC, disabling the Final Cartridge, going to the FREEZER and redrawing the screen. All of which are pretty straight forward except perhaps the freezer option - more on that soon.

Next up we have the PROJECT menu in which we can gain access to such things as the NOTEPAD - a simple text editor, Dlink and Tlink which are provisions made for future expansions of the system. Not a bad idea actually, this shows that the programmers of Final Cartridge III are planning to enhance this cartridge in the future - this in itself is a good sign for those wanting to buy a product that will grow with time rather than gather dust.

Personally I was a little disappointed with the Notepad. Included is a smart text font with which you can change the spacing and other characteristics. However, these features are for the screen only. The printout is in normal text, rather than a high-res graphics dump. So, all that razzmatazz is all looks and no go. Shameful waste that.

A quick glance at the UTILITIES menu shows five options - preferences, basic preferences, a calculator, disk and tape access. These functions are useful in that they allow you to set up the computer in a way that suits you - quickly and easily. From the BASIC preferences you can select key repeat, audible click and whether or not the cursor flashes.

Apart from this you can do almost any disk access from the Desktop without knowing much about commands, it is all in an easy to understand point and click style format.

## The freezer

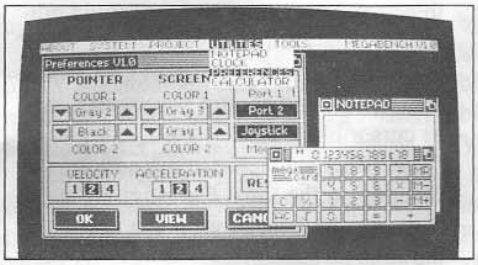
The freezer is a must for the real hacker. It allows you to do such things as screen dumps, memory compaction and saving and colour controls.

There are some interesting utilities included in the freezer to aid the avid game player on his road to the high score hall of fame. One helper is the sprite collision disable, this basically makes the player invincible - no bullets, collisions or unforeseen circumstance will lead the player to destruction. Also a big favourite with the gamers is the AUTOFIRE selection that allows your joystick to pump out constant bullets of whatever is the case.

For the hacker, FC III have included a memory save ability in the cartridge that allows you to save the contents to disk or tape. This allows backups to be made of all your favourite programs, however, logic dictates that only programs that reside totally in memory at one time will be able to be backed in this method.

## Basic commands

There's a few enhancements which don't have specific commands related to




them. For example, the two-way scrolling list function. This uses the cursor keys to scroll through the program in memory, similar to most good machine code monitors today. Just move the cursor off the bottom of the screen and the listing continues with the next line number. You can up as well off the top of the screen. This makes editing a BASIC program an absolute breeze.

To make scrolling down much easier, you can (by pressing the keys (CTRL) & (CLR/HOME) simultaneously) move the cursor directly to the left bottom corner of the screen. Also a handy little helper is the ability to delete the rest of the characters on the line you are editing after the current cursor position - this is done by pressing (CTRL) & (DEL). You can freeze the listing at any time by pressing the Commodore key.

If at anytime you precede a number with the dollar sign ($) then the Final Cartridge will assume that it is a hexadecimal number. This allows you to use hexadecimal numbers in both programming and in direct mode. It's therefore possible to easily convert from decimal to hexadecimal and vice versa.

Almost 30 added commands are at your disposal to help you bash together you favourite hacks quickly.

**Append** - this allows you to add subroutines or whole programs that are on disk or tape to the program in memory.

**Array** - This command will list the contents of the arrays you are currently using.

**Auto** - Automatically provide a fresh line number when you are entering a series of lines.

**Bar** - This command will disable or enable the pull-down menus. The reason for this command is to ensure compatibility with other programs - the manual recommends that if a program doesn't work try it again after you have disabled the pull-down menus.

**Dappend** - This command is the same as Append but defaults to disk.

**Del** - This allows you to delete a group of lines within your BASIC program, a feature that allows you to tidy up your programs quickly.

**Desktop** - This transfers you from BASIC to the Desktop.

**Dload** - Loads programs from disk with out the added annoyance of the ",8".

**Dos** - You can enter a disk command normally requiring several OPEN and PRINT# statements in one line. For example:-

```
OPEN 15, 8, 15
PRINT #15,"S:PROGRAM NAME"
CLOSE 15
```

Can be replaced with:-

```
DOS "S:PROGRAM NAME"
```

Examples of how to use DOS"

DOS" - Will read the error channel.
DOS"$ - Will display the directory of the disk.
DOS"N0:name,id"- Will format a disk.
DOS"V - Will validate a disk.
DOS"9 - Will change the default drive to device 9.

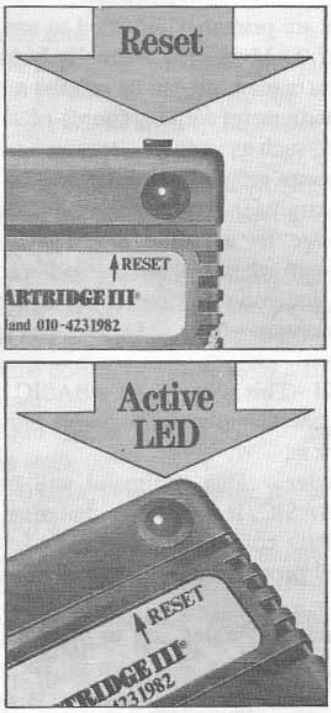
As you can see this makes short work of using the 1541.

**Dsave** - Saves the program in memory to disk using TURBO speed (seven times faster).

**Dverify** - This is just the same as VERIFY "NAME",8

**Find** - A very powerful function. Allows you to locate a specific piece of data that is in a program listing. When debugging programs this command is a dream come true. In the event that you have to track down a bug you might need to know which lines handle the variable Z$, you would just enter FIND Z$ and the lines containing the search string are listed.

**Kill** - Disables the Final Cartridge



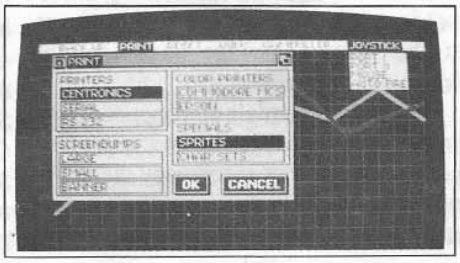

III, only the freeze option is remains available.

**List** - Basically (pun) the same as good old LIST but it has the added advantage of being able to overcome some of the protections that guard against such an activity.

**Mem** - This gives you a report on the available and used memory and how it has been allocated.

**Mon** - This activates the machine code monitor, a good one at that, from basic.

**Mread & Mwrite** - Reads 192 bytes of memory from a given memory location onwards. Using the Mwrite command you can transfer these bytes to the 24K of RAM which normally lies 'under' the ROMs. It is possible to transfer all memory locations, but these com-



mands are primarily intended to use the 24K of RAM which is normally 'hidden'. This extra memory can be used as a storage medium for large amounts of information, such as variables, text and graphics screens, reference tables etc.

To transfer the 192 bytes the Final Cartridge III uses the tape buffer, so make sure when you are using this command that you don't expect the tape buffer to contain what it did before you started.

**Old** - This will restore a BASIC program that was in memory before either a reset or a NEW.

**Order** - This command will order your BASIC. It is possible that after the APPEND command the order of your BASIC program will be out of numeric order.

**Pack** - Enables you to pack a program in memory and save it. The program automatically de-compacts once run. Saves disk space and decreases time required for modem transfers.

**Pdir** - Print the directory of a disk simply and quickly - quite a useful command.

**Plist** - Prints a program listing.

**Renum** - Renumber your BASIC program so that you can make room to insert lines in your program or perhaps to tidy things up after the append command. Of course this also takes care of any GOSUBs or GOTOs.

**Trace** - Display each line of a BASIC program as it is being executed. It will continue until the command is disabled with TRACE OFF.

**Unpack** - This will unpack anything that has been PACKed.

Almost all of these commands would be used frequently in programming and that is a sure sign that the programmers of the Final Cartridge have thought things out thoroughly.

Often the downfall of very good programs is the insufficient and unprofessional manuals that accompany them. Final Cartridge III in this regard is a dream come true - the manual is helpful, well written and easy to understand. It even includes a comprehensive contents page - very nice.

## Conclusion

Overall the Final Cartridge III is a vast improvement over previous offerings. It takes up where the Action Replay Cartridge left off, adding an array of BASIC commands, machine code monitor along with various other goodies.

Even though the Desktop feature may be seen to be all bells and whistles and have no usefulness, it does allow some things to be manipulated that could otherwise could not be - such as including the C128 numeric keypad in C64 mode, key repeats and control over such things as cursor blinking.

All this aside, the remainder of the features on the Final Cartridge III make it easily the best buy on the market at the time of publishing.

Distributed by Pactronics (02) 407 0261, RRP $129.00. ■

# On-Line Help for the C64 user

by Eric Holroyd

IF YOU WRITE programs in Basic you'll probably know the scenario: You're half-way through the best thing you ever wrote, your brain's working properly and all you have to do is get this last sub-routine working and the rest will fall into place. You can't quite remember how the commands go for the bit of code you're writing so you decide to look it up in one of those books you've got scattered around the place. Unfortunately, by the time you find the right book and search through it for the bit you want you've probably lost the thread of what you were doing. Sound familiar?

If have loaded *On-line help* at the start of your session you'd have been able to get the information you needed just by pressing the F1 key. You'd have then had instant access to 17 screens of help telling you about such things as:

ASCII character set
Screen POKE codes
Colour codes
Sound registers
All musical notes
DOS commands syntax
Basic keywords
Basic abbreviations
Basic token values
Useful memory locations
Keycodes for location 197 (key pressed)

Select from the screen-menu the subject you want, get the information then press F7 to go back to the menu. Pressing "X" returns you to your programming session with all your code intact. It's that simple.

If you have a Cockroach TurboRom in your C-64 you can get a hardcopy of the various Help screens by pressing C=/ F7 to send the text screen to the printer. Very handy!

*On-line Help* uses very little of the RAM available for Basic programs and in fact the screen displays "30120 Basic Bytes Free" after loading the program.

If you program in Basic you need this utility. I liked it a lot and it's found a permanent place in my disk-box.

*On-line Help* is distributed in Australia by Westend Computers (03) 350 5144 RRP $34. ■

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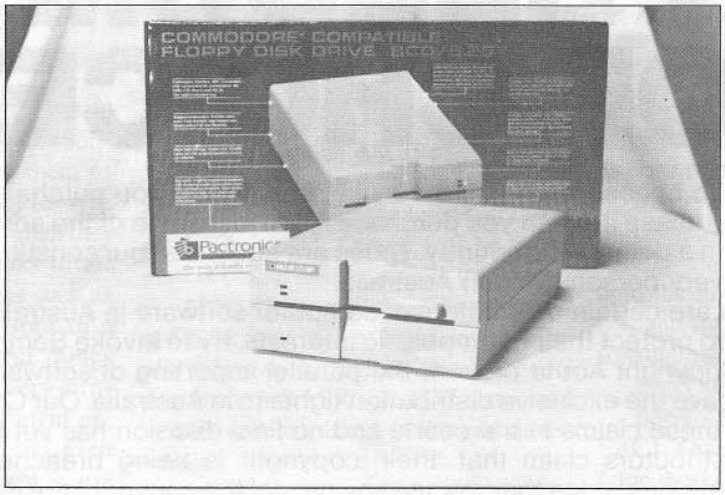
# Pactronics PCD 5.25 drive

## - 1541 alternative

by Andrew Farrell




It seems the offerings to buyers looking for alternatives to the 1541 come and go, just as frequently as do stocks of the real thing. This latest model adds a few new features to the list of extras.

The drive is an Hyundai unit, which is made in Korea. Korea is rapidly becoming one of the major challengers in computer manufacturing. Most of the Amstrad computers - if you will excuse the expression - are made in Korea as are a lot of Apple - excuse again - monitors. Most of the gear that comes out of Korea is well made, well designed and at the right price. This Pactronics drive, like other compatibles, boasts an external power supply, which is the simplest way to improve reliability.

Despite the fact that there is an external power source the size of this disk drive is not reduced by very much. In fact, it is only slightly shorter than the 1541 and about as wide. The Pactronics unit has a far more solid feel, and smoother lines than any previous offering.

The drive door has a swing gate type latch, and three LEDs - light emitting diodes. One light shows the power is on, one light shows the drive is in use and the third light is a write-light, so you can tell when your disk is having information stored to it.

On the underside of the drive unit there are 14 screws - an unusually large amount for a disk drive - although only six actually hold the top and bottom halves together. There are a large number of ventilation slots on the underside of the unit to draw cold air in. At the top rear of the drive is another set of slots to let the hot air out.

The Pactronics drive sits firmly on four strong rubber feet, and looks perfectly at home next to a C64c. At the back of the unit are two serial ports, as per usual, the power socket, and a small power switch which is a rather small rocker type unit. Overall, the Pactronics drive looks good externally. Inside, the design is equally as compact, with the ROM chip being socketed, and a very tight PCB design. Two very large heat sinks are at the far rear of the drive.

## Operation

As far as speed is concerned the Pactronics unit is much the same as a 1541. However, it is umpteen times quieter. The bottom line with all these cloned units is compatibility. This is a very compatible disk drive. In short, this unit scores a 99% rating.

We tested numerous cartridges and programs and 99% were found to be completely compatible. The 1% found incompatible were old programs but Pactronics can, in most cases, modify these programs to ensure that they are compatible. Basically this unit is as compatible as the Commodore disk drive itself.

## Overall

From the current set of alternatives, the Pactronics drive is the pick of the bunch. I'd recommend it above Commodore's own 1541C which suffers major compatibility problems. It still pays to have a true blue 1541, but this unit is a very competitive alternative - and the real thing is often hard to come by. Now when will someone bring out a 1571 replacement - you can't get the darn thing anymore!

The Pactronics Disk Drive is unique in so far as it has ceramic read/write heads, and a steel drive head positioning band for reliability. These design features, when combined with the external power supply and the improved venting, add up to far fewer alignment problems. The Pactronics Disk Drive is therefore guaranteed for 12 months as opposed to Commodore and other drives which are only guaranteed for three.

Pactronics are so confident in their Drive's compatibility that they are offering a money back guarantee to anyone who buys the drive and finds not enough of their software is compatible, or alternatively they are prepared to modify the consumers software to ensure it is compatible.

Our review unit came from the Australian distributors of the drive, Pactronics. Recommended retail price is $349. For more information call (02) 407 0261. ■

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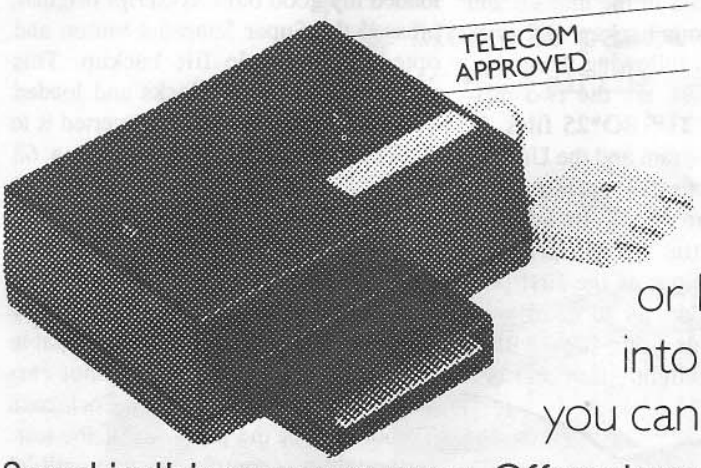


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# Super Snapshot version 3

## Cartridge system for Commodore 64
## An UPDATE review by Eric Holroyd

*I reviewed Version 2 of this cartridge in the February '88 issue of ACR. I liked it a lot then so I was very pleased to get the update to Version 3.0 PAL Super Snapshot.*

This has a lot of useful enhancements, like the built-in copy system which offers both full disk and file copiers from the main menu. You may use either one or two drives and everything is menu-driven and very fast.

The disk copier first of all formats the destination disk (with the name of Super Snapshot V3) then reads and writes the data alternately between the source and destination disks. I've never seen the pre-formatting idea before and although it takes a few seconds longer than the copiers which do the whole thing at one go I feel that it may be a more reliable system.

Copying files is just a matter of highlighting the files to be copied and sitting back for a few moments whilst it all happens. Incidentally, it doesn't crash if you try and copy an existing file, it appends a reverse character to the file name and makes a second copy instead. Very clever.

As in Version 2 there's a very good DOS Wedge system which lets you perform all kinds of disk functions with "shorthand" commands and the TURBODOS system speeds up those functions quite considerably.

## Parameters

Also included in the package is a disk of Super Snapshot "parameters" to help back up those programs which can't be backed up with any cartridge. Such programs do a "late protection check" after the program has started and in these circumstances the memory-capture method gives an incomplete backup. Instructions for the disk's use are in the manual and you should get your backup OK with this system by just following them.

Also on the disk are the two programs relating to TURBO*25 files, ie the Conversion program and the Utilities program (for various disk operations on these non-standard files). In addition there's a nice little "boot" program which you should put as the first program on a disk so as to load with "*",8,1. This loads your files with a simple cursor highlight/return and is a beauty.

## Backups

The backup option has been improved with the addition of an option to save your backup as a single file. If you choose this, and the backup can be compacted to less than 202 blocks, you'll get just that, a single file. If the original program is too big you'll end up with two files, the first one containing the loader and de-compactor code so as to enable the backup to run without the cartridge. If you don't opt for a single file you'll get the older style backup with a loader and 5 files. This needs a program called XXXA which is on the accompanying disk and which you simply copy across to the backup's disk with the file copier I just mentioned.

The TURBO*25 feature lets you convert your single file backups to an even faster loading system and to do this you load the TURBO*25 converter program from the disk and follow the simple prompts. This makes a super-fastloading program which does need the cartridge installed to run, but as you're only making backups for your own use and not for illegal distribution that's no problem.

To test out the backup capabilities I loaded my good old *EasyScript* original, pressed the Super Snapshot button and opted for a single file backup. This turned out to be 64 blocks and loaded quite quickly as it was. I converted it to TURBO*25 and it ended up as a 68 block file which loaded in four seconds! An old favourite game, *Ardy Aardvaark*, ended up as 72 blocks and again loaded in four seconds!

The only extra hardware in use in my 64 system to achieve this remarkable speedup was the Super Snapshot cartridge itself. I'd disabled my Cockroach TurboRom for the purposes of the test (although it's completely compatible) and I don't have any of those other devices with "umbilical cords" connecting special chips in the drive to other bits in the 64.

## Drives

Speaking of drives, Super Snapshot will work on 1541, 1571 and even the 1581 (if ever Commodore bring any to Australia!). Most features support the use of two drives which makes everything super-easy. The very fine 1571 drive has itself been in extremely short supply too, but those lucky enough to own one will be pleased to know that the S/S V3 manual tells how to use it as a genuine double-sided drive in 1541 mode (ie without having to take the disk out and turn it over). Super Snapshot has routines built in to use this mode plus the 1328 Blocks Free which you'll have available. The file copier outlined above works in this mode as well as in normal 1541 mode so you should be able to

copy C-128 files too.

With regard to the C-128, if you use this machine in 64 mode you can opt to have your Super Snapshot with a switch fitted to allow you to use C-128 mode without unplugging the cartridge. (If you switch the C-128 on with a cartridge in place it defaults to C-64 mode).

I tried out the backup feature on some highly copy-protected current software and had no problems once I disabled the 64's reprogrammed Function Keys (which the S/S manual advises when backing up) and was able to make fast-loading copies of many favourites with average three games per side. Once again, I'm not condoning piracy, simply making easy backups for my own use only.

The Code Inspector (M/L monitor) which I talked about in the original review has had some enhancements too but as I'm not a machine-code programmer I don't fully appreciate them. The manual calls it a "hacker's dream come true", saying that at the touch of a button you can see what's going on at any time in a program whilst it's actually running. Simply press the cartridge button and enter the monitor, check what's happening, make a few changes if you like (preferably not on your original!), then resume operation of the program right from where you left off. All of this without corrupting memory!

Sprite collision can be disabled to give you infinite lives in a game and you may disable sprite to sprite and/or sprite to background collisions. There's an extended life feature too for which you need to have a reset button on your 64 (but most serious 64 users already have this, don't they?)

## Screen copy

Screen-copy lets you print what's on the screen as a hard copy and supports most types of printers with good results in varying size printouts. Unfortunately, the anticipated feature of sprites being included in the printout isn't yet included but will be on a future update. In Screen-copy you may also save the picture to disk with S/S working out the which format it's in, ie Koala (multi-color) or Doodle (hi-res). Pictures saved can then be modified with any number of excellent graphics packages on the market and even made into a slide-show complete with scrolling messages in multiple fonts by using the Super Snapshot *Slideshow Creator* which is available separately.

I mentioned updates above and very simply it's this: When the next version is ready (and you'll see it advertised) just send in the chip from your current version together with the update fee (currently US$20) and you get the new chip back quick smart and pop it back into the cartridge. (I did this myself just last week and it's a very simple job even for old fumble-fingers me.) Alternatively you can send in the complete cartridge and they'll do the swap-over for you.

## Suggestions

I've reviewed other memory-capture cartridges/utility systems for the C-64 previously and I like all of them. They all have individual "best" features but I'd have to say that this is the one I find suits my needs best. Having said that I'd like to offer a few suggestions of my own for features that I consider to be necessary in a utility system:

(1) I think the file copier needs both a directory option plus a disk full warning,

(2) Maybe the manual should include a warning not to Validate a disk having TURBO*25 files. Their non-standard format didn't seem to like me Validating a disk with a splat file (one with * after it which indicates a dangerous situation)

(3) I think the "no-blocks boot" program should auto-run. Other than that I could find no real cause for criticism.

Super Snapshot is completely invisible to all current software so the cartridge can safely be left plugged in all the time. This way you get maximum benefit from all the system's features and in fact mine's sitting there right now just waiting to be used. I liked the update very much and I can recommend the product very highly.

Distributed by Westend Computers (03) 350-5144.

RRP $129.95. ■


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# Super Snapshot Slideshow Creator

*A companion program to the C-64 Super Snapshot cartridge, that turns your computer into a mini-slide projector.* Eric Holroyd *writes.*

AS I SAID IN MY review of the Super Snapshot cartridge, the Screen Copy feature allows you to save a bit-mapped screen to disk for further viewing or manipulation. Files will be saved as either *Koala* or *Doodle* format depending on whether they were multicolour or hi-res screens originally.

This excellent *Slideshow Creator* program will now allow you to use the screens you've captured to make a continuous show of your pictures complete with messages. As there is a built-in high-speed fast disk loader routine the slides come up on screen pretty quickly.

The Super Snapshot cartridge is required to create the slideshow but not to run it. This means, of course, that you can create "stand-alone" slideshows for any number of uses : business presentations, teaching aids, in-store displays or just for sending to friends.

## Creator

There are three modules in this software, the Creator, the Projector, and the Programmer. The first module needs the Super Snapshot in your 64's cartridge port as it uses some of its code to make the slideshow. Once you've loaded the Creator you'll find that it's all menu-driven and quite simple to work with.

Simply follow the prompts to (R)ead the directory, select the pictures to be included by highlighting with the cursor keys and pressing Return, then (C)reate the slideshow. From the menu here you may use the DOS Wedge commands for disk access and may format a data disk if you'd forgotten to do it before loading the software.

You may also change drive numbers so as to (R)ead on one drive and (W)rite to another. The manual says that extra drives must be hard-wire device changed and 8, 9, 10 or 11 may be used. I have a pair of 1541s which work OK as drives 8 and 9, (the drive 9 is permanently changed internally to drive 9 which is what "hard-wiring" means) and the setup worked beautifully.

I had to switch out my Cockroach TurboRom, however, as that excellent gadget is set up for a "software" device change (by sending a command) as opposed to the "hardwire" device change required by the *Slideshow Creator*. It's for just this type of situation that the Cockroach people made their TurboRom switchable in and out. Very sensible.

Having read the picture files from disk and started to create your show you now have a number of options to choose from.

● **First up** is the time-to-display setting, and you may (a) show the slide for a set time-period from 0 seconds to 4 minutes and 59 seconds, (b) show the slide until the scrolling message ends, or (c) show the slide until the SPACEBAR

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is pressed.

● **Second option** is really impressive as this is where you modify the "wipes" which is a fancy way for saying the way the slides come on and go off again. Choices are : dissolve, shutter, slide and pop. All are good effects and you may "mix 'n match" the wipes, ie slide in and shutter out, pop in and dissolve out, shutter in and pop out. These effects will make your show look really professionally produced.

● **The third option** is concerned with the "scroll" mentioned in (b) in the first option. This lets you put a scrolling message across the picture in a range of 10 fonts, in nine different colours and in two font heights, in any screen position including the top and bottom borders. There are other scroll parameters which you may modify also, including whether your message takes foreground priority or not.

Fascinating stuff, and quite easy to do. The buffer allowed for your scroll message is quite large and the whole thing is very impressive when finished.

There was a demonstration slideshow on the back of my program disk which showed the program off extremely well and gave me a few ideas. After seeing this in action I got straight down to the job of making my own slideshow.

It took me a couple of hours or so, and I made quite a good job of my first attempt (so it must be easy to work!) which used around 22 *Koala* pictures complete with quite a long scrolling message on each one. *Doodles* seemed to take up a little less disk space than *Koala* pictures when I used a couple of them so I suppose you could use between 22 and 26 pictures per disk, depending on picture type and length of scrolling message.

## Programmer

This isn't all by a long shot, as I said at the start that there were three modules. The third module is the Programmer. This is billed as "a powerful graphics programming tool" with uses only limited by your own imagination. The makers say in the manual that you'll need a general knowledge of either Basic or 6502 M/L to use it fully and to help you along they've supplied a couple of sample programs to illustrate how it's used.

The Basic demo file can be listed, examined, then run, and it has a good number of REM statements to let you know what's going on in the program's operation. There's also a M/L listing (you may use either the Basic or M/L version) so that you may examine the way a 6502 program would work in loading, displaying and wiping your pictures. The M/L listing is labeled and commented and shows the JUMP table of the Programmer module.

When you've made your show, or set up a number of pictures with messages or whatever, a LINKER has been provided to enable you to link and compress numerous files together into just one file. This little utility will allow you to easily link your Basic or M/L screens driver to the Programmer file and full instructions are in the manual for you to work from. Using the Linker along with the Programmer you can use screens and pictures made or captured with the Super Snapshot within your own programs.

The names of some of the programming team who put this great idea into practice are mostly new to me. The chief programmer is Jeff Spangenburg, fast load routines by Joe Peters, concept and instructions by Les Lawrence, none of whom I knew. I did recognize the name of Wayne Schmidt who did the "Super Artwork". I've seen a lot of his work in *Ahoy* magazine's Art Gallery and he's some artist.

The other guys must be of a similar calibre in their respective fields because the whole thing has come out very good and very user-friendly.

I only had two criticisms: One was that if I'd worked on a picture to make a slide and didn't like it after all I couldn't cancel it (I thought). It was saved to the slideshow disk which keeps a sort of "running order" in a file called "files" and which apparently locks in irrevocably the slides created.

I tried to scratch a couple of files I didn't really like, they're numbered on the directory as "slide-000, slide-001 etc". I scratched numbers -021 and -022 whereupon the Projector program loaded and displayed slide-023 a total of three times (to compensate for the two I'd scratched, I suppose.) On my next slide-show making session I found that Run/Stop would in fact cancel a slide I didn't wish to save and so renewed my confidence in the whole thing.

I couldn't find the Run/Stop feature documented in the manual so keep it in mind yourself.

The other criticism was that the projector module didn't automatically run the slide-show that I'd made. Instead it came up with an options menu, to choose drives in use, device numbers etc

The demo slideshow as mentioned above did, however, automatically run once I'd typed Load"*",8,1 (Return).

Turns out that if you use the Programmer module to make your own loader that's what you get, an auto-running program. So . . . , all I had to do was read the manual properly and all would have been well. There must be a message in that somewhere!

The programmers themselves have put a final paragraph in the manual expressing the hope that users will realise the vast amount of work that went into the development of the program and asking all users not to give away copies of the disk which they've purposely left non copy-protected. Instead, they say that users should ask their friends to PURCHASE their own copies and thereby support the software developers, without whom there's be no new software.

The Slideshow Creator is distributed by Westend Computers (03) 350 5144 RRP $95.00. ■

# Great Galactic Conflict

Prizes totalling $6,000 are up for grabs in the Microtex 666 Great Galactic Conflict. Played through Telecom's Viatel, this engrossing game of strategy and negotiation features a cast prize of $2,500 for the winner.

Set in a galaxy of 25 constellations, each player takes the mantle of a stellar Warlord bent on domination. As everyone starts with just four battle fleets, any single-handed attempt to take on the galaxy will almost certainly meet with failure. For any real chance of success, Warlords must negotiate treaties or form alliances - this gives them the opportunity to attack in strength and guard each others' territory. Each planetary system in the galaxy is able to support one battle fleet, so the more systems Warlords conquer, the more fleets they have at their disposal.

But alliances may be fragile - perhaps you would be better off switching your allegiance to an up-and-coming Warlord in your constellation? Can you be sure he will keep his part of the bargain, or does he see you as easy pickings? Will your former allies launch a concerted attack on your fleets?

And if you are going to take the first prize, it's likely that you will have to renege on your agreements and go for broke. Can you pick the right moment for such an action?

This challenging game starts on September 19th and takes just over five weeks (16 rounds, with three rounds per week). Players submit orders through Viatel response frames, and the database is updated within a few hours of the deadline for each round. The game includes public and private messaging between players, whose identities are masked by colourful pseudonyms like "Planet Buster" or "Commander X".

The player finishing the game with control of the most planetary systems will win $2,500. Second and third prizes are $1,000 and $250, and the next five players will receive membership of The Computer Trader's Preferential Price Performance Plan (valued at $100). There are other prizes in the form of cash, goods and services, and trophies will be awarded to the moneywinners.

Only the first 1,000 entries will be accepted, so register now on Viatel *666616#. If you are not yet a Viatel subscriber, write to FREEPOST 6, Great Galactic Conflict, 77 Glenhuntly Road, Elwood 3184 for more details. ■


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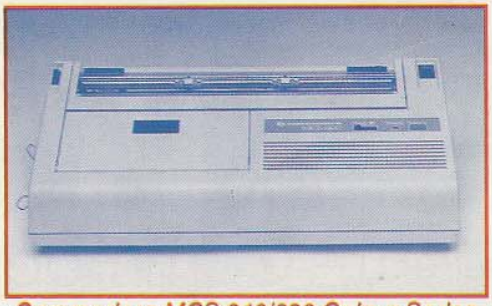

*Commodore MCS 810/820 Colour Series*

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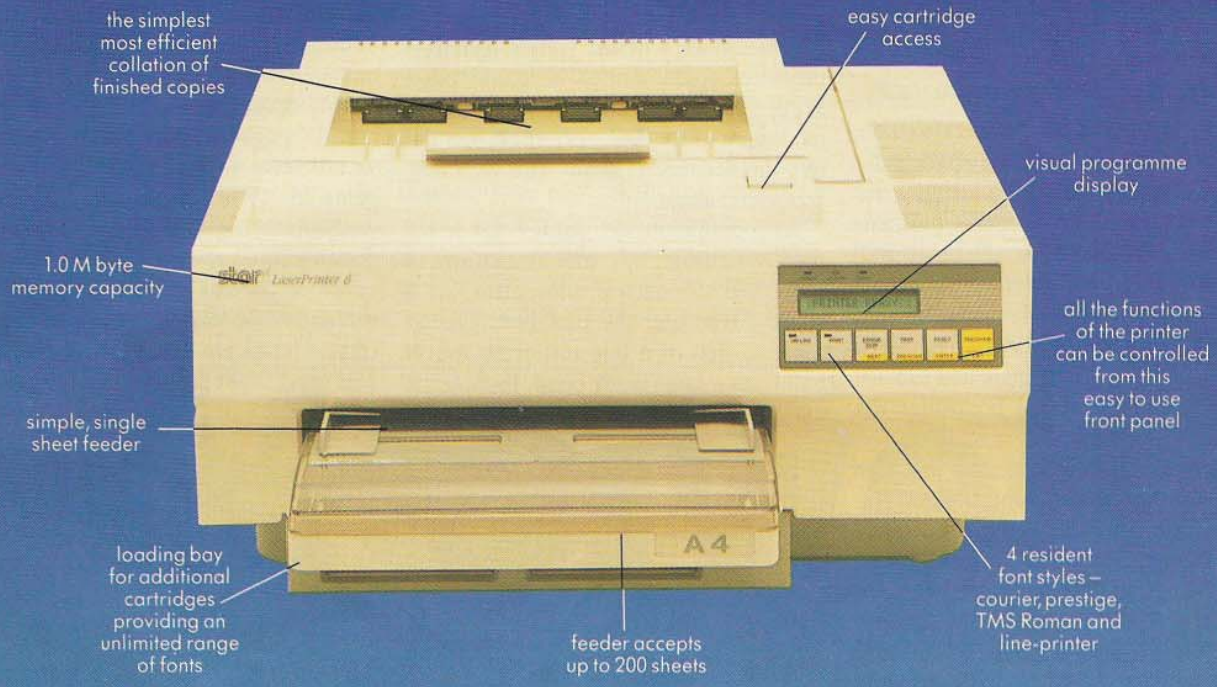
# THE STAR LASER 8 IT'S ENOUGH TO MAKE HEWLETT PACK IT IN.




At around $5,000* the Star Laserprinter 8 might seem like a big investment. In fact, after just one year, this top of the line machine will have actually worked out to be cheaper than the very cheapest machines on the market.

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Which brings us to about the only other laserprinter that's even vaguely comparable. Hewlett Packard.

Both printers look alike, cost about the same and run on the same ultra-reliable Canon SX engine. But that's where the similarity ends.

With it's superior memory management and standard hardware, Star enters a class of its own. In fact, with twice the memory capacity of the Hewlett Packard, twice the number of fonts and almost twice the speed of first copies, it really is twice the machine.

Indeed, just to bring the Hewlett Packard up to Star's standard would cost you around $2,000 in extras. And of course, even then, it still wouldn't be a Star.

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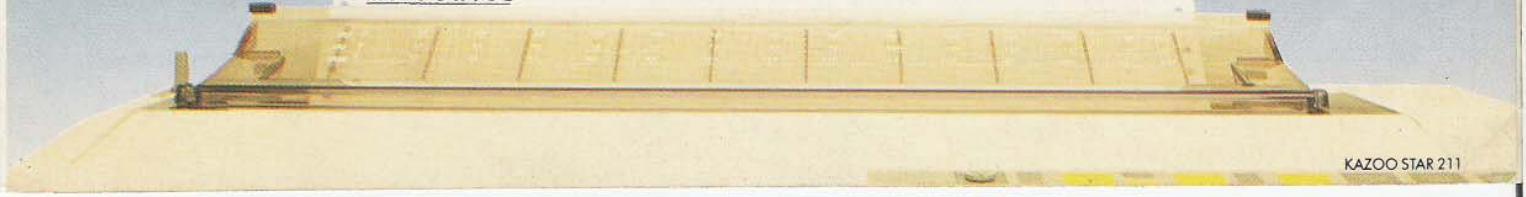


KAZOO STAR 211

# Echelon

## with Lipstik controller

*Can this new 3D space adventure topple the likes of Elite and Mercenary?*
***Andrew Farrell*** *hyperspaced out of earth's orbit (using a voice actuated command) to file this review.*

ON THE SURFACE of all the full-colour advertising frequenting the back pages of overseas publications, *Echelon* looked like the be all and end all of flight simulator/combat/adventure type games. It was with that view in mind that I powered up the C64, and connected to it a joystick and Lipstik - the voice actuated fire controller for *Echelon*.

After booting the disk, the program begins a rather tedious procedure of displayed text - one letter at a time - just like a slightly souped up 300 baud modem. It gives you the option to LOAD at turbo speed. This didn't work on our drive. With slow loader selected, the text option requested me to speak into the Lipstik controller the words "one", "two", "three".

"Great!" I thought, "Voice control!". .. Alas, that was not to be. In fact, the Lipstik is actuated by just about any sound, or word, and produces one action only - that equivalent to the fire button on most arcade games. Although the manual accompanying the game never promised anything more, the ads I refered to did indicate a bigger things.

As an "extra hand" to press fire, the Lipstick is fantastic. It works reliably to every cry you make - including, if you're not careful how close you place it to your mouth, heavy breathing.

Finally, the game begins. *Echelon*, the space craft, looks complicated. And it is, at first. However, this complexity is highly overrated. As a flight simulator it handles like a Boeing 747 rather than an advanced space craft. It hovers like a helicopter carrying a house.

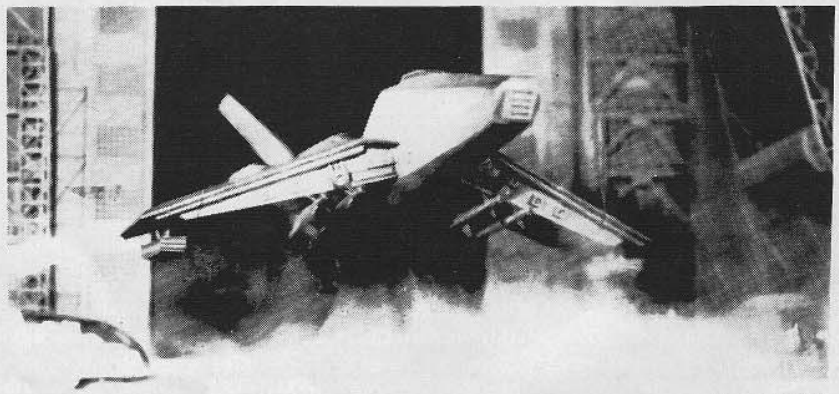
On the back of the packet *Echelon* promises three modes of game play. Well, I hate to disappoint you, but the modes are rather dull. As a flight simulator, the scenery is drab. The handling you know about.

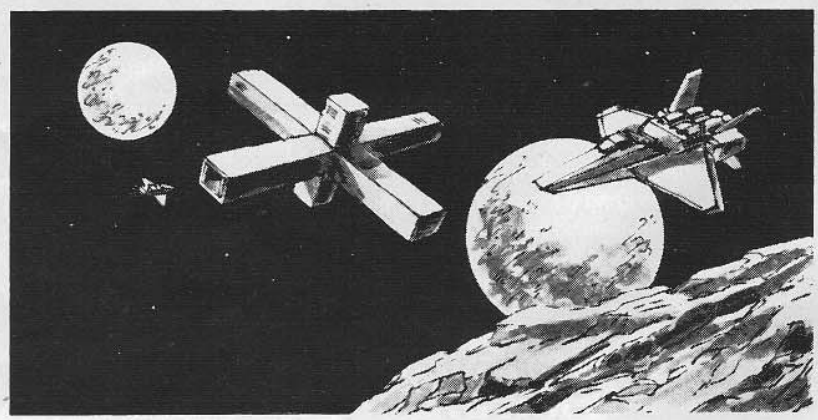
In combat mode, things get a bit more exciting, but the animation is jerky and the enemy uneventful. As a space adventure, the plot is much the same as that of a boy retrieving a golf ball from a large black pond. In *Echelon* the pond is the size of a golf course, and to succeed you need to collect dozens of balls.

> "This would have to be the most over-rated game for 1988."

My apologies to all the guys on the credits page of the manual, but this would have to be the most over-rated game for 1988. If you didn't pretend it was something it isn't you might have gotten a better review.

Now for the objective parts. The screen layout and design for the interior of your craft are excellent. As with any half good flight program, you can choose between a variety of views, as well as





being tracked from a remote point. In *Echelon* you can virtually fly up to a point, stop, go directly up or down, and hang upside down. It's like a cross between a helicopter and a Harrier jump jet.

This does not necessarily provide a good feeling of flight.

The ground is standard wire frame, with the flat area reduceable to dot points to help speed things along. Mountains and other objects crop up now and then. Most are fairly simplistic. Nothing worth faxing home about.

Sounds are good. Docking is a pain. Too fiddly. I spent nearly ten minutes getting my heading to 000 and all the other dials to read a round figure. Too much hassle to be enjoyable.

I think I'll stop now, while I'm behind. Overall, an excellent concept, that stops short in too many departments to be good. Worth adding to your collection, just to take a quick look at, but I wouldn't go paying good money for it . . . Did I say that? ■

## Now a completely different view of **Echelon** from Phil Campbell

"Fire!... Fire!" Desperate cries ring out through the Campbell residence. But nobody panics. Everybody knows I am just talking to my Lipstik.

The Lipstik is a neat new game control device distributed in Australia by Questor (ph 697 8666). Packaged with *Echelon*, a complex Commodore 64 space game, the Lipstik is best described as a voice activated fire-button.

Instead of pushing a button to launch missiles or fire your laser canons, you simply speak into the headset. Notice, this is not voice recognition - nor does it claim to be. It makes no difference whether you tell the Lipstik to "fire", wish it a belated "happy mothers' day", or ask it to "turn on the toaster". It will simply trigger the firing mechanism.

But it works extremely well. It ignores background noises but responds promptly to spoken commands, and generally lets you get on with the serious business of playing *Echelon* with what has been described as "an extra hand."

Unfortunately for me, one extra hand was not quite enough. *Echelon* is a complex and challenging program. Billed as a "3-D Space Flight Simulator", this game pulls no punches - only fully qualified astronauts need apply. The 70 page instruction manual just adds to the overwhelming sensation - casual gamers, beware.

> "Echelon is a complex and challenging program."

Part of the complexity arises from the fact that this is a game that tries to be "all things to all men". It can be played as an arcade action game, a flight simulator, or a strategy style exploration game by selecting "Military", "Patrol" or "Exploration" modes.

So far, I have successfully managed to leave the base station docking bay and explore my allocated patrol zone a little. The lower half of the screen displays the instrument panel of my "C-104 Tomahawk", the 21st century equivalent of a Toyota Landcruiser. This general purpose space-ship can go anywhere, and do almost anything. If only I knew how to fly it.

The upper section of the screen displays the view from my window. Presented in "wire frame" 3-D format, the illusion of movement is effective. Banking and rolling produce immediate changes in perspective, and with a little added imagination, it is just like being there.

Every now and then an enemy craft comes into view. Line up the cross hairs with your joystick, bark a few abrupt commands into the headset, and hopefully your foe will explode into a ball of flame. This is fun stuff.

Still, there is much to explore and much more to learn about *Echelon*. There are still objects to be found and teleported aboard, pirate maps to be discovered and decoded, and finally, the Pirate base to be neutralised. The manual promises many hours of gameplay. I suspect this is an underestimate.

*Echelon* is a game for the seasoned player. Mastering the spacecraft and completing the game objectives should provide a long term challenge. Graphics and sound are well done (as you would expect from the authors of the famous *Leaderboard* golf simulation). Those with enough staying power to endure the game's long learning curve should find very little to complain about.

The inclusion of the Lipstik is a great attraction. It is a handy little gadget with huge potential. Unfortunately, most of it will not be tapped. While it can be used with other games - and even on many other computers - at present you will be limited to software that expects the "Fire" signal through the second joystick port. The simple addition of a "pass-through" socket on the Lipstik would have allowed you to use it in parallel with your existing joystick on any game. Enterprising gamers may be able to build themselves an adaptor.

In the mean time, *Echelon* should keep you happy - though perhaps a little hoarse.

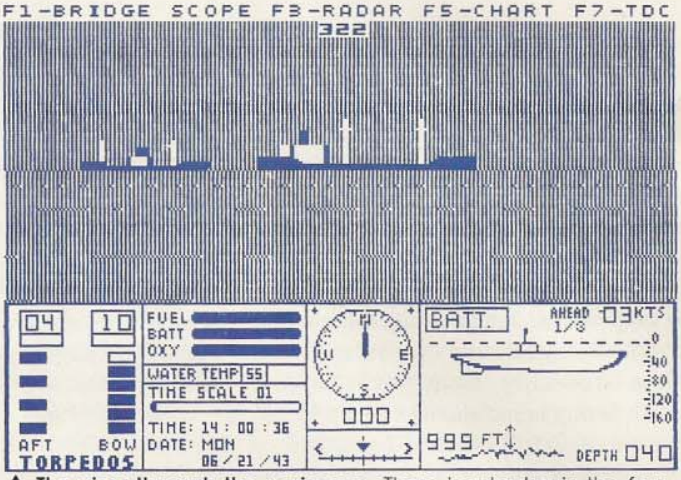
Distributed by Questor (02) 662 7944.

*Echelon* plus Lipstik Controller RRP $79.95 for both disk and cassette. ■

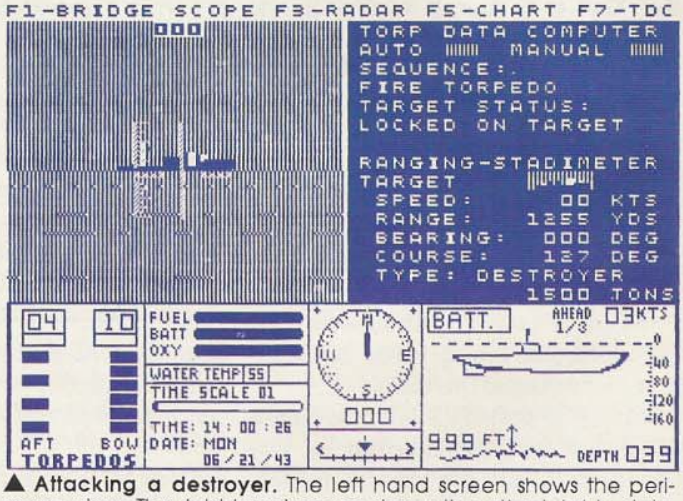
# Up Periscope

by Peter Davies

*The latest submarine simulation/strategy game from Actionsoft. They claim it is "the new state of the art in submarine simulation" - and they may be right.*




▲ **The view through the periscope.** There is a tanker in the foreground, and a freighter in the background. The number at the top is the periscope bearing. The compass at the bottom shows the direction that the submarine is travelling. A little manoeuvring is necessary before an attack can be mounted.




▲ **Attacking a destroyer.** The left hand screen shows the periscope view. The right hand screen shows the attack table data. The destroyer's spped has yet to be found, so that the correct torpedo bearing can be calculated. At a rnage of 1255 yards firing a spread of three torpedoes is almost always successful.

WHAT DO YOU get for your money? One disk. With both the 64 and 128 versions on the same side (more on that later). There is a 30 page instruction book, a 122 page book *Submarine Action in the South Pacific* (mine was printed upside down and back to front!) and four maps of the Pacific Ocean.

The 128 and 64 versions are identical, although the 128 loads faster (1min 5secs) than the 64 version (3 min 25 secs). Disk access throughout the game is also slower on the C64, but this does not interfere with playing the game. There is a game save, but a separate disk must be used in both versions. Using the back of the game disk in 128 mode will wipe the disk!

The instructions book is clear and simple, although the section on using the attack table (called the torpedo data computer) is over simplified, (but this is dealt with in great detail elsewhere). The other book gives a history of submarine and torpedo development, and of submarine warfare in the Pacific Ocean during World War II. It also explains the strategy and tactics used by both the American and Japanese navies (essential knowledge to play the game to its full extent), as well as describing some famous battles and patrols.

The maps are of New London, the training area; Hawaii, the staging area; and the North and South Pacific Oceans, the combat areas. These maps also show the various resupply bases for the submarine, but similar maps accessible on the disk do not - a good protection against pirates.

The submarine is a World War II American Fleet class submarine, and seems to be a very accurate simulation. The instruments are detailed and accurate; and the control commands are logical and easy to remember. Control is by either joystick and keyboard, or keyboard alone. The control reference chart is a joy to use - other simulator makers would do well to copy it. The submarine sails and handles well. Learning to control the submarine is easy, and can be done in less than an hour. Learning the tactics to survive, and learning how to successfully stalk a convoy, and aim the torpedoes (in the manual mode) is a much much longer lesson.

To play, the disk is booted (128 version) and then a very large game menu is offered, starting with a choice of five different scenarios. Then the commanding officer's skill is selected, with a choice of six ranks (Lieutenant to Admiral; the higher the rank, the harder the game); and then the number of days at sea, which affects the submarine's general efficiency. Then the submarine design features are chosen, with variations in torpedo type and aiming ease, and submarine reliability and hull design. Also there are tactical selections, with enemy expertise, visibility and performance variations. Finally the time and date (which affects the Japanese area of control) is set. It sounds complicated, but the menu is so easy to use all selec-

tions can be made in a few seconds. Obviously, with all these variables, many different games are possible.

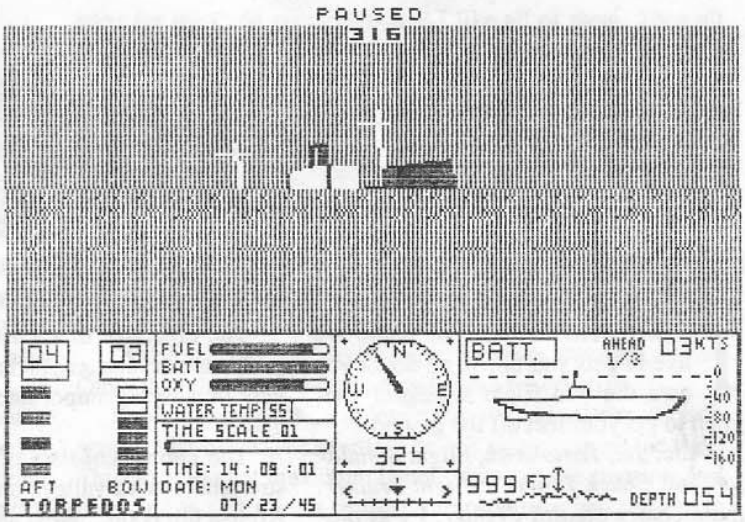
By setting the submarine up for maximum efficiency, and with automatic torpedo aiming; and the Japanese for minimal experience, it is easy to sink ships. It can be done within five minutes of starting the game. But if both sides are evenly matched, with manual torpedo aiming (as it was in World War II) one attack might take an hour real time, and 18 hours game time. (You can speed up playing time up to 32 fold, which shortens the playing time if you want to play a full 120 day patrol!) The game save also helps.

The game you play depends more on the scenario chosen than anything else. The five scenarios are **Refresher Training**, and **Peacetime Cruise**, both training cruises; **Historical Situation** (a short game), and **Pacific Patrol** ( a long game) where you re-enact the famous actions and patrols described in the books. Here you are scored by your success compared to the real life results.

The fifth option (my favorite) is **Transit**, where you select a battle zone (North Pacific, South Pacific or Hawaii), and then plan your entire patrol scratch. The books show the main Japanese convoy routes, and the convoys sail around in a very realistic way. There appear to be 14-16 convoys in each area, but the Pacific is a BIG ocean. The instruction book gives essential tips on how to locate enemy convoys. Otherwise you could spend days and never find a ship, even using radar. Good navigation is a big help here. In this scenario you are scored according to the tonnage sunk during the patrol. You are promoted (or demoted) according to your score when you return to your supply base. Promotion makes the next patrol harder.

Although you can select very simple, short and easy games, I think that this sells the simulator short. It is a true strategy game as well as a simulator, and it can demand a great deal of thought in planning a successful patrol. It can also test your mathematical ability, if you attack a convoy using the periscope and no other aids except your brain - the most realistic option.

Attacks can be made both submerged and from the surface, (although the later should only be done at night, or you will be rapidly sunk); with torpedoes and the deck gun. One complaint - I have not yet sunk a ship with the deck gun, even though I have hit them many times. Aiming the gun is not as precise as aiming torpedoes, either.




▲ **A successful attack.** A freighter is sinking after being hit with two torpedoes. Out of sight a Japanese destroyer is closing at 27 kts, to attack with depth charges. Diving to 90 feet and turning through 90° often avoids the attack.

There are four types of enemy ship, destroyers, tankers, freighters and troop transports; each with its own characteristics. Convoys are a mixture of ships, usually, but not always, with a destroyer escort. In some areas ships sail individually, especially at night. In convoy the destroyer(s) often zig-zag around the other ships, and so change their position relative to the convoy and to you. This makes planning an attack difficult, which is why they do it. It is easy to forget about the destroyers when attacking a convoy, which can be disastrous. Getting sunk can affect your promotion!

If you are detected on the surface, the ships will sometimes try to ram you, while the destroyers use their guns. If submerged, the destroyers attack with sonar and depth charges, often with great success.

There are some minor flaws in the game. There is a problem with the deck gun, which seems incapable of sinking a ship, no matter how many times it is hit. The gun is not terribly accurate, either, although this may be realistic, as submarine guns were meant for use at short range only.

The maps supplied are not well drawn (compared to *Flight Simulator II* maps) and have several mistakes. Brisbane is about 1000km away from where the map shows it! However, the combat zone maps are reasonably accurate.

It is not possible to easily sail from the North Pacific to the South Pacific areas. However, one can go back to the menu and move from one area to the other in the same patrol.

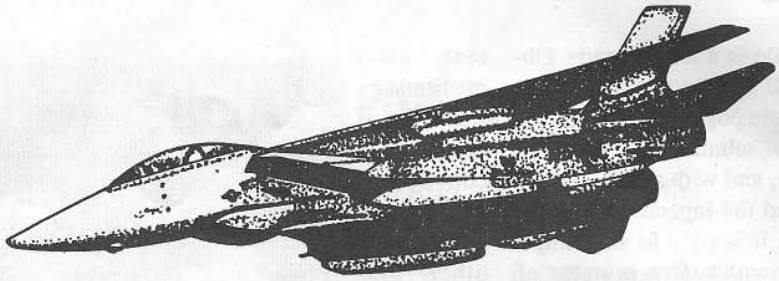
The book *Submarine Action in the South Pacific* is not well laid out. It is interesting, and has a wealth of useful information on tactics, strategy and general survival tips. But it needs to be read many times to find them all, as many are buried in the stories.

However, these are minor faults, and do not interfere with playing the game.

In short, as a submarine simulator it is at least as good as *Silent Service*, and as a strategy game it is better. I prefer *Up Periscope* to *Silent Service*; and it leaves *Gato* for dead.

Distributed by Computermate Pty Ltd (02) 457 8118. RRP $59.00.

# Stealth Mission

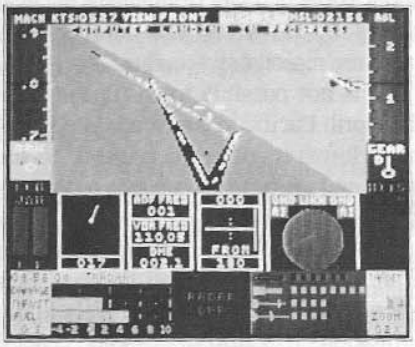


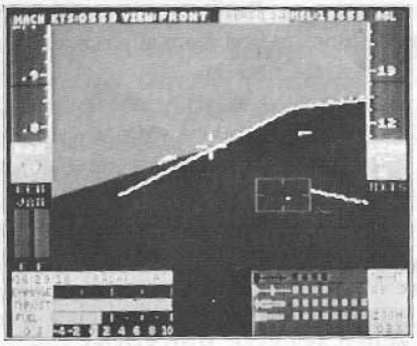
by Ken Longshaw

IF THE HORIZONTAL plane we live in gets you down, no doubt you own the odd flight simulator program to get your feet off the ground.

After *Jet*, *Tomahawk*, *Flight Simulator*, and *Chuck Yeager's Flight Trainer*, there comes *Stealth Fighter*. I was prepared to be bored by it, having played *Jet* on the Amiga. However I was very pleasantly surprised.

The game consists of three main missions to various parts of the "Stealth World". This all comes beautifully documented and mapped out. By doing a strange thing - yes, I read the instructions right through - I was able to get straight off to a "flying start".





The objective of each mission is to penetrate a hostile area and neutralise targets of varying importance. So far so good.

The choice consists of a mountain stronghold with valleys and rivers and Afghan hill people. Next an ancient ruin upon a very high (5000 metres) plateau, inhabited by nasty Migs and surface to air missiles (Sam). Then there is the epic Falklands scenario. With a score of guided missile cruisers and a couple of island based squadrons of Migs it is a lot of hard slog. A marathon bombing run completes the quatro.

Each scenario is set up from a series of multiple choice menus.

After choosing a basic skill level, easy/hard, the choice of ten levels within that is available. A brief description of the mission pops up. Next the choice of aircraft - X29 experimental, Stealth F19 or F21 Tomcat. The implication of each choice as far as performance and payload are concerned is explained in the very comprehensive documentation.

The Simulator feature of SM can be set at this point for the time of day, weather conditions etc. If you are an advanced pilot the ADF and VOR Navigation systems match the complexity of MS Flight Simulator. After reading the documentation I hold an Air Navigation Certificate from Kelloggs!

Once you are seated in the cockpit, the payload of armaments needs to be selected. From the ten hardware items it is advisable to select what will most suit your mission. "Going to the Falklands with no Harpoon anti-ship missiles - tch tch, silly!"

Once the payload is aboard the cockpit view is loaded. The heads up display is very comprehensive and easy to read. Bars as well as digital readouts accompany clear icons for the various functions, selections and conditions.

Radar and TADS on, you "light your tail" (afterburners) and head for heaven. By toggling the ground grid off and opting for wire frame display, the animation speed is greatly enhanced. Nice feature for those aerial acrobatics we all love to put F14s through.

> "This is a real beauty . . . flexible and realistic enough to tease the best."

Maps, spotter planes and control tower views complement the good displays. Zoom is useful unless you drop below X8 (in map) and the necessary info needs to be loaded from disk. (A bit of down time.)

"Missile eye" views make the action just a little more real and here the animation is really good (for a 64).

So off you go for a tumble in the sky. For the serious flyboys this is a real beauty. For the rest of us *Stealth Mission* represents an excellent value for money package. It is flexible and realistic enough to tease the best, and if you fail, eject and watch yourself drift earthwards, from the spotter, and the program will tally your score, tell you what a good pilot you are, and leave you to sneak another mission in before lights out.

Published by Sublogic Stealth Mission is distributed by Questor (02) 662 7944, RRP $99.95. ■

Australian Commodore Review SUITE 64

# Disk magazine No. 11

## Features

- **Circle Navigation** - calculate the distance between any 2 points on the earth
- **"Panes"** - windows utility for your own programs
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# From the bench

*Running a Commcare Centre offers a view of the computer user not available in other branches of the industry.*

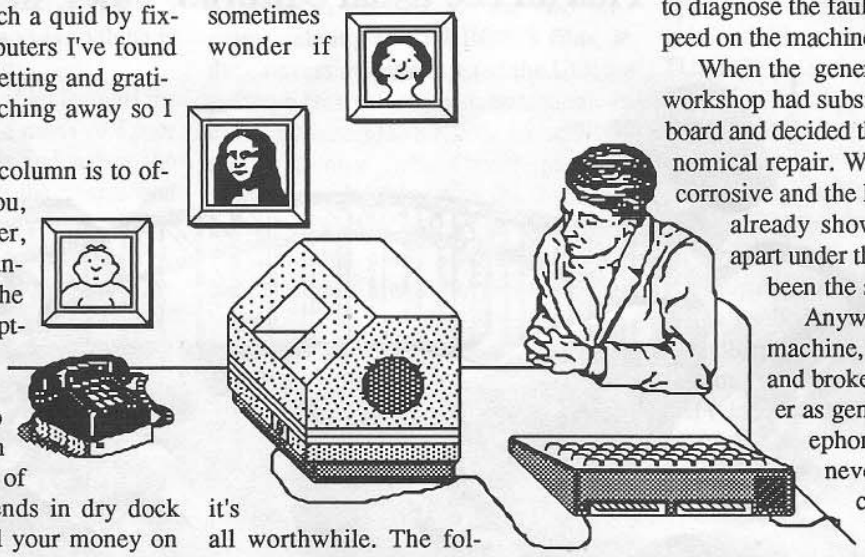
OVER THE LAST few months I've encountered the irate, the angry, the unreasonable, the bemused and the grateful. I've been called a liar, a fraud, a bandit and a saint. As a humble soul just trying to scratch a quid by fixing other people's computers I've found these episodes both upsetting and gratifying but I'm still scratching away so I must be enjoying it.

The purpose of this column is to offer some insights to you, the Commodore owner, into the problems encountered by the man at the bench when he is attempting to revive your comatose computer. Along the way I hope to impart a few tips which will reduce the amount of time your machine spends in dry dock and allow you to spend your money on more enjoyable things than repair bills.

When I first came into this industry, repair techniques were fairly basic. If the valve was cold, it wasn't working. Grasp firmly and pull it out. Locate and fit replacement. (This was in the days when a machine with 16K would have been a monster. The first machines I worked on had a whole 4K of memory!)

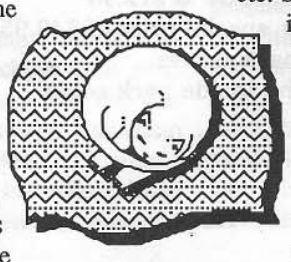
Transistors replaced the valves, and we all had to learn to use the latest techniques for soldering these funny little gadgets in without damaging them. No sooner had we mastered these wonders of miniaturisation than the integrated circuit appeared on the scene. My goodness, we even had to HANDLE them properly. No static, don't bend the legs, don't overheat them and "Sorry, but you can't actually see whether it's working or not."

Well, despite the years and the users, I'm still here. However, with the advent of Home Computers, and the new generation of computer users that they have spawned, I sometimes wonder if it's all worthwhile. The following story may give you some idea of what I mean.



## Catalyst

This particular repair involved a fairly new 128. The machine was brought in by a lady who told us that something had been spilt on the keyboard and that she would like it cleaned and dried before she dared to turn it on. Seemed reasonable, but the unusual smell should have alerted us as the machine came over the counter. However, we booked it in and it duly arrived on the bench of Tony Curse.



Fine technician though he is, Tony is not noted for his subtle use of the English language and the arrival of the 128 provoked a torrent of the sort of phrases that led to his nickname. Removing the top cover revealed two things. One, even more of that strange odour, and two, a very wet main board . . . It only took Tony a couple of seconds to diagnose the fault. "Some bloody cat's peed on the machine!".

When the general hilarity around the workshop had subsided we examined the board and decided that it was beyond economical repair. Why? Because urine is corrosive and the legs of the chips were already showing signs of falling apart under the attack. (Could have been the smell I suppose).

Anyway, we condemned the machine, and possibly the cat, and broke the news to the owner as gently as possible by telephone. Now bad news is never easy to give or receive, but you would have thought we were announcing the start of World War 3.

Never mind that it wasn't our cat or that we hadn't allowed it to pee all over the machine, we were supposed to fix it. After all, computers should be made so that they can withstand this sort of treatment. After a heated three or four minutes we just stated flatly that we could do no more and hung up on the threats of Consumer Affairs, friends of the boss etc. So far we've heard no more about it and to be perfectly honest we don't expect to.

## 1571/128D problem

While we're on the subject of the 128, a problem has come to light for owners of 1571 Disk

Drives and 128D computers. After a period of use these machines develop a serious inability to read or write disks. This is often incorrectly diagnosed by repair shops as, "Oh the usual head alignment problem, just like a 1541."

As often as not the problem IS head alignment, but not the problem that plagued the 1541. That was where the head would not step to the correct track, which was relatively easy to remedy even if it wasn't always a permanent fix.

The 1571/128D problem is rather more insidious and a damned sight more expensive to correct. The culprit is the head lift design. On these drives the head is supported by two small leaves of spring steel which are riveted to the mechanism. When the door is opened the top head is lifted clear of the disk by a small arm located under the top head rail. The problem is that the arm only lifts one side of the head and after a while the head develops a tilt which prevents it sitting squarely on the disk surface. Instant disk errors! The head cannot be satisfactorily removed and re-fitted so unless we get lucky and manage to tweak the head back straight we have to remove the entire mechanism and replace it. Cost of repair, wait for it, $345!

Before you panic, here is a simple way of extending the life of your 1571/128D. When it is not in use, refit the head-protector or an old disk, and close the door. This removes the strain from the spring steel supports and leaves the heads square on the disk.

## Quick tips

- If you have a Datasette that is playing up, invest in an Azimuth Alignment kit. They don't cost much, are easy to use and over a couple of alignments will pay for themselves.
- DON'T plug things in to your computer while either the computer or the peripheral are turned on. We replace more interface chips that have been damaged by this activity than for any other reason.
- Clean your disk drive heads regularly and for crying out loud don't buy cheap disks. They deposit piles of garbage on the heads and your drive will very quickly quit.

That's it for my first effort, but next month I'll introduce you to some of our crew and cover a few more points that could make your next trip to the repair shop a bit less painful. ■

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# Machine Code tutorial

## Part 7

*There are sixteen kilobytes of Read-Only Memory full of routines in the Commodore 64, all ready for use. Andrew Baines looks at ways of using these routines in your programs, and to interface your programs with BASIC.*

THIS MONTH, as promised, we'll look at BASIC's floating point routines, and ways of using them to our advantage. There is no need to write routines for our own programs when they already exist in memory, thanks to the people at Commodore. Routines such as division, finding the square root of a number, and all the wonderful things BASIC readily does that seem very difficult when machine code is brought up, are actually very accessible, and even easy, once the basic principles are known.

You've heard of the Accumulator, the X and Y registers, but BASIC's floating point routines use floating point accumulators. There are two of these, named floating point accumulator one (FAC1) and floating point accumulator two (FAC2). These exist from $61-$66 and $69-$6E respectively. There is also an additional work space from $57-$60, and numerous other memory locations dotted around page zero, so it is safest to stay out of zero page - put your code somewhere else.

Floating Point Accumulator One is the main workhorse. It is used by all routines, and all routines put the answers to their operations in here. BASIC also allows you to set up your own Floating Point Accumulator, and operate on it (called floating variables).

There are forty-four routines BASIC makes available to us that we will look at. Most require precise calling environments - one small number left out and the whole operation falls over without actually having started. I will endeavour to give an overview of what is available, with a few flexible examples, but detailed examples will follow in later issues:

## Floating Point Routines

AB24 - Print an ASCII string pointed to by $22. The length of the string must be in the 65XX Accumulator before the routine is called. Output will be to the current output device, usually the screen.

ABF9 - Input routine - fills the buffer at $0200 from current input device. Usually this is the keyboard. This is the routine used by BASIC's INPUT statement. A $00 will be placed at the end of the string.

AFE6 - FAC1 = FAC1 OR FAC2 - Logical OR. Same as BASIC's OR. No special requirements.

AFE9 - FAC1 = FAC1 AND FAC2 - Logical AND. BASIC's AND. No requirements.

B1AA - Convert FAC1 to integer in the 65XX Accumulator (high byte) and Y register (low byte).

B1B2 - Convert Numeric Expression from floating point to Fixed point integer.

B1BF - Convert FAC1 to two byte integer (from -32768 to 32767). Store in $64-$65.

B3A2 - Convert 65XX Y register to floating point format in FAC1. Y register must hold number for FAC1 before calling routine.

B79E - Evaluate expression and convert FAC1 to integer (0-255). Store the result in the X register. This routine calls CHRGET to give it the next byte of BASIC text. If you wish to use it, save $7A-$7B and place the location of your expression in $7A-$7B. Restore $7A-$7B when finished.

B7A1 - Convert FAC1 to integer between 0 and 255. Store in X register. Be careful when using this routine that the number in FAC1 is positive, and in the range (0-255), otherwise BASIC will call its error routines.

B849 - FAC1 = FAC1 + 0.5.

B850 - FAC1 = Floating Variable - FAC1. The 65XX Accumulator must hold the low byte of the floating variable, and the Y register the high byte before calling this routine.

B853 - FAC1 = FAC2 - FAC1.

B867 - FAC1 = Floating Variable + FAC1. Once again, the 65XX Accumulator must hold the low byte and the Y register the high byte of the floating variable before the routine can be called.

B86A - FAC1 = FAC2 + FAC1 ; There is one entry condition that applies to this routine: the 65XX accumulator must be loaded with $61, the exponent of FAC1. eg. To call this routine: LDA $61:JSR $B86A.

B947 - FAC1 = Two's Complement of FAC1.

BA28 - FAC1 = FAC1 * Floating Variable. The 65XX Accumulator must hold the low byte of the address of the floating variable, the Y register the high byte.

BA2B - FAC1 = FAC1 * FAC2. The 65XX Accumulator must hold the exponent of FAC1 before calling this routine. eg. LDA $61:JSR $BA2B.

BA8C - Copy Floating Point Variable to FAC2. Before calling, the 65XX accumulator must hold the low byte of the floating variable, the Y register the high byte.

BAE2 - FAC1 = FAC1 * 10.

BAFE - FAC1 = FAC1 / 10.

BB0F - FAC1 = Floating Variable / FAC1. The 65XX Accumulator must hold the low byte of the address of the floating variable, the Y register the high

byte before this routine can be called.

BB12 - FAC1 = FAC2 / FAC1. The 65XX Accumulator must hold the exponent of FAC1 at entry. eg. LDA $61:JSR $BB12.

BBA2 - Copy Floating Point Variable in memory to FAC1. Upon entry, the Accumulator must hold the low byte of the floating point variable, the Y register the high byte.

BBC7 - Copy FAC1 to $5C-$60.

BBCA - Copy FAC1 to $57-$5B.

BBD0 - Copy FAC1 to memory pointed to by $49.

BBD4 - Copy FAC1 to memory whose address is held by the X and Y registers. The X register must hold the low byte, the Y register the high byte.

BBFC - Copy FAC2 to FAC1. This routine does not round.

BC0C - Copy FAC1 to FAC2. This routine rounds when called, and then copies.

BC1B - Round FAC1. Upon entry, the 65XX Accumulator must hold the exponent of FAC1. eg. LDA $61:JSR $BC1B.

BC39 - FAC1 = SGN ( FAC1 ) - Returns Sign of FAC1 in FAC1. The results come up as: $00 = zero, $01 = positive, $FF = negative.

BC3C - Convert 65XX accumulator to floating point format in FAC1. The 65XX accumulator must hold the number to be converted to floating point format upon entry.

BC44 - Convert $62 and $63 in FAC1 from integer format to floating point. Your program must store its integer in $62 and $63 in normal low byte-high byte format before calling this routine.

BC58 - FAC1 = ABS ( FAC1 ) - Returns Absolute value. The absolute value is simply the distance away from zero of this number, or, the number's sign made positive, no matter what.

BC5B - FAC1 = FAC1 compared to Floating Variable. There are entry and exit conditions for this routine. The entry conditions are that the 65XX Accumulator holds the low byte of the Floating Point Variable, the Y register the high byte. Upon exiting, the 65XX Accumulator will hold $00 if the Floating Variable = FAC1; $01 if the Floating Variable < FAC1; $FF if the Floating Variable > FAC1.

BC9B - Convert FAC1 to four byte integer in FAC1.BCCC - FAC1 = INT ( FAC1 ) - Returns integer portion of a number.

BCF3 - Convert ASCII number (decimal) to floating point format in FAC1. This routine makes use of BASIC's CHRGET routine, which GETs the next character in the program text for processing. So to use this routine, we must make CHRGET get characters from our ASCII string. A full example of this is shown below. CHRGET uses $7A and $7B to point to the current text. All we have to do is save $7A and $7B, point them to our ASCII string, call CHRGET, and then call this routine.

BD7E FAC1 = FAC1 + accumulator (65XX accumulator - range - $00 - $09).

BDCD - Convert 65XX Accumulator (High Byte) and X register (Low Byte) to floating point format, then to and ASCII string, then send to the current output device. Usually this is the screen.

BDDD - Convert FAC1 to ASCII decimal number at $0100. Upon Exiting, the 65XX accumulator holds $00, and the Y register $01 to point to the string at $0100.

BF71 - FAC1 = SQR ( FAC1 ). Returns the square root of FAC1.

BF7B - FAC1 = FAC1 raised to the power of FAC2. At entry, the Accumulator (65XX) must hold $61, the exponent of FAC1. eg. LDA $61:JSR $BF7B.

Here are a few examples of how to use these routines:

130 input LDA #0 ; LoaD the Accumulator with the value zero. The first example we will look at is an input routine. It inputs a number from the current input device using the routine at $ABF9.

140 TAX ; Transfer the Accumulator to the X register.

150 clr STA $0200,X ; STore the Accumulator in $200+X. This is where BASIC's input buffer is, so we're going to make sure its empty.

160 INX ; INcrement the X register.

170 CPX #80 ; ComPare the X register with the value 80. The buffer is 80 bytes long.

180 BNE clr ; Branch if Not Equal to clr. If we haven't cleared enough, branch to clr.

190 LDA $7A ; LoaD the Accumulator with $7A. This routine saves the CHRGET pointer so it can be used by a machine code routine called by a BASIC program.

200 PHA ; PusH the Accumulator on to the stack, saving $7A.

210 LDA $7B ; LoaD the Accumulator with $7B.

220 PHA ; PusH the Accumulator on to the stack, saving $7B.

230 JSR $ABF9 ; Jump to SubRoutine to $ABF9, BASIC's input routine. This is the same routine that is called by BASIC's INPUT statement. Make sure that you only type in numbers when the question mark prompt comes up. Otherwise, strange things could happen.

240 STX $7A ; STore the X register in $7A. The input routine returns with the X and Y registers pointing to $01FF, one less than the input buffer.

250 STY $7B ; STore the Y register in $7B.

260 JSR $73 ; Jump to SubRoutine to $73, CHRGET, pointing to the first character in the buffer.

270 JSR $BCF3 ; Jump to SubRoutine to $BCF3, which converts an ASCII decimal number to floating point format and puts it in FAC1.

280 PLA ; PulL the Accumulator from the stack.

290 STA $7B ; STore the Accumulator in $7B. Notice how the first byte on is the last byte off the stack.

300 PLA ; PulL the Accumulator from the stack.

310 STA $7A ; STore the Accumulator in $7A, restoring CHRGET.

320 RTS ; ReTurn from Subroutine. This routine will accept numbers such as -432E+20 (and more normal ones like 23). Try assembling this routine, and then type in this BASIC program:

10 poke784,76:poke785,lowbyte of machine code:poke786,high byte of machine code

20 #pf=usr(0):printf:end

After running this program, you will see the prompt. Type in a number. It will be stored in FAC1, and BASIC's USR function will take it out of FAC1 and store it in the variable 'f'. BASIC will then print f, the number you just typed in.

330 output JSR $BDDD ; Jump to SubRoutine to $BDDD. Now that we've established an input routine, we need an output routine. $BDDD converts FAC1 to an ASCII string at $0100. When its finished, the Accumulator holds $00, and the Y register $01, pointing to the string.

340 STA $22 ; STore the Accumulator in $22.

350 STY $23 ; STore the Y register in $23. $AB24 looks to $22 for the string it has to print.

360 LDX #0 ; LoaD the X register with the value zero. We also have to find the length of the string.

370 find LDA $0100,X ; LoaD the Accumulator with $0100+X. This load will affect the zero flag.

380 BEQ end ; Branch if EQual to zero to end. Test the zero flag, if the last number dealt with is zero (because there was no CoMPare used) branch.

390 INX ; INcrement the X register to point to the next byte at $0100.

400 BNE find ; This is a dummy branch - it will always branch as the X register is never zero, and the string is never 255 bytes long.

410 end INX ; INcrement the X register to point to the end of the buffer +1.

420 TXA ; Transfer the X register to the Accumulator.

430 JMP $AB24 ; JuMP to $AB24, to print the string at $22 with the length of that string in the accumulator.

Try calling the input routine, then the output routine, and you should see the same result as with the input and BASIC program routines linked. Use SYS this time, it doesn't affect FAC1.

440 multay LDA #10 ; LoaD the Accumulator with the value 10. This routine multiplies the Accumulator by the Y register, leaving the result in the X register. Then the result is printed by loading the accumulator with zero and calling the routine at $BDCD.

450 JSR $BC3C ; Jump to SubRoutine to $BC3C to convert the Accumulator to floating point format, storing it in FAC1.

460 JSR $BC0C ; Jump to SubRoutine to $BC0C, copying FAC1 to FAC2.

470 LDY #8 ; LoaD the Y register with the value 8.

480 JSR $B3A2 ; Jump to SubRoutine to convert the Y register to floating point format, storing it in FAC1. FAC1 now holds 8, and FAC2 holds 10.

490 LDA $61 ; LoaD the Accumulator with $61, the exponent of FAC1. This is the entry requirement of the next routine.

500 JSR $BA2B ; Jump to SubRoutine to multiply FAC1 by FAC2, leaving the result in FAC1.

510 LDA #0 ; LoaD the Accumulator with zero.

520 STA $0D ; STore the Accumulator in $0D, which, if zero means the current argument is a number, not a string.

530 JSR $B7A1 ; Jump to SubRoutine to convert FAC1 to integer format, and store it in the X register.

550 LDA #0 ; LoaD the Accumulator with the value zero, making the high byte for the next routine zero.

560 JMP $BDCD ; JuMP to print the Accumulator (high) and X register (low) on the screen (or current output device).

Try changing the original contents of the Accumulator and Y register for different results.

570 divide JSR input ; Jump to SubRoutine to input, the first routine presented today, leaving the number in FAC1.

580 JSR $BBCA ; Jump to SubRoutine to copy FAC1 to $57-$5B.

590 JSR input ; Jump to SubRoutine to input, to obtain the divisor.

600 LDY #$00 ; LoaD the Y register with zero, the high byte of $57.

610 LDA #$57 ; LoaD the Accumulator with the low byte of $57.

620 JSR $BB0F ; Jump to SubRoutine to $BB0F, to perform the division.

630 JMP output ; JuMP to output to print the result on the screen.

## Interfacing with BASIC

There are several ways of interfacing with BASIC, the easiest of which are the commands SYS and USR. SYS allows you to pass information to the 65XX's registers through the memory locations 780-783 ($30C-$30F). Just POKE the information into these memory locations, and SYS to the routine, BASIC will pass the information on to the Accumulator (780), X register (781), Y register (782) and the Stack Pointer (783).

USR allows access to BASIC's floating point routines. USR is a function, meaning it must have a number in parenthesis following it. That number is passed to FAC1, and if the USR function is made to equal a variable, this variable will receive FAC1's contents. eg: USR(5) will pass the number 5 to FAC1, but P=USR(5) will pass the value 5 to FAC1 and after your routine has finished, pass FAC1 to P. You can then use P as a normal variable. The address of your routine must be POKEd into 785-786 ($311-$312) in traditional low byte-high byte format. It is also a good idea to POKE 784 ($310) with the çvalue 76, the value representing JMP, as BASIC JuMPs to 784 ($310), which is expected to JuMP to your routine.

It really is easier if you can give BASIC most of the work instead of writing lots of routines that are already accessible. Don't worry about speed, BASIC loses speed through interpretation of BASIC programs, and as long as you steer clear of those, you'll be right.

If you can't quite grasp machine code, don't worry, one day it will click, and the whole picture will come in crystal clear. In the meantime, write your own routines to set the colours of the screen, store characters on the screen, and make SID sing. It gets easier if you write programs by yourself, and it's very rewarding to see your creations work! ■

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Part II

# Design Your Own Operating System

*In Part Two of this three part series, Andrew Baines presents an operating system designers' dream - a define-it-yourself function key wedge.*

HOW MANY TIMES have you seen a function key program in a magazine? How many times has it been sculptured to the writers' exact specifications? How many times have you thrown the magazine across the room in frustration because the writers' way of doing it is not yours? How many times have you sat down in front of the television this year and nearly gone crazy as yet another Bicentennial something or other comes on? All these questions have similar answers, even if I am having a go at the you-know-what (I promise I won't mention it again).

Well, this time, don't throw AC&AR across the room: I'm not going to impose my thoughts as to what your function keys should do. Just think, 25 function keys, all up to you to define, and the program relocatable! No, don't pinch yourself, this is for real.

All you have to do is to place your own commands in lines 310-380 and 400-650, but make sure you don't change the number of spaces in the quotes, otherwise things will very soon go wrong. You may have noticed that you are allowed only ten characters, including the <return> (if required). This is because the character buffer is only ten characters long, and is not easily moved (as it is virtually impossible). Also, 'Z' is only allowed 6 characters, but this should not prove a problem, as you will probably never need it.

This program allows access to all eight function keys, and most keys pressed with the control key. These keys are: CRTL + A, B, C, D, F, G, J, K, L, O, P, U, V, W, X, Y, Z. Note that the control key must be held in while pressing these keys. The missing characters - E, H, I, M, N, Q, R, S, T- are already taken by the Commodore screen editor. 'E' turns the character colour white, 'H' and 'T' enable and disable the Commodore and shift key function respectively, 'M' performs a return, 'N' changes to lowercase, 'Q' moves the cursor down one, 'R' turns reverse mode on, 'S' homes the cursor, and 'T' performs a delete.

Just before we take a look at the program itself, a word about interrupts.

Sixty times a second (roughly) the computer stops, and JuMPs to the vector at $FFFE. This points to the beginning of the interrupt routine. But, to make things more complicated, when a BReaK is encountered, the computer stops and comes here too. So this routine tests the BReaK flag in the status register. If there isn't a BReaK condition, JMP indirectly to $0314 (JMP ($0314)) to the interrupt routine. This routine updates the cursor, system clock, performs a few more mundane tasks, and ReTurns from Interrupt (RTI). All we have to do to make the computer go to our routine first, is to make $314 point to our routine, and make our routine go to the Kernal routine when it is finished. You might be interested to know that the computer JuMPs to $FFFC on resetting, and $FFFA on NMI interrupt (RESTORE key).

Let's take a look at how it works:

90 SEI ; SEt the Interrupt disable flag.

100 LDA #<test ; LoaD the Accumulator with the low byte of our interrupt routine.

110 STA $314 ; STore the Accumulator in the low byte of the Hardware Interrupt Vector.

120 LDA #>test ; LoaD the Accumulator with the high byte of our interrupt routine.

130 STA $315 ; STore the Accumulator in the high byte of the interrupt vector.

140 CLI ; CLear Interrupts.

150 RTS ; ReTurn from Subroutine.

160 compare .byt 10 ; Later, when we calculate the position of the commands to be put into the character buffer, we will need this location to see if we're at the end of the command yet.

170 length = 10 ; This is the length of the character buffer.

200 test JSR $FF9F ; Jump to SubRoutine to the Kernal's routine to scan the keyboard, and put the input into the keyboard buffer.

210 LDA $277 ; LoaD the Accumulator with the first location of the keyboard buffer, $277.

220 CMP #$8D ; CoMPare the Accumulator with the value $8D, one more than F8's ASCII value.

230 BCC yes1 ; Branch on Carry Clear to yes1. The computer will go to yes1 if the accumulator is less than $8D. If it is more than $8D, we are not interested in it.

240 end JMP $EA31 ; If the value was $8D or more, JuMP to $EA31, the normal interrupt routine.

250 yes1 CMP #$85 ; CoMPare the Accumulator with the value $85. Now we're testing to see if its a function key. If so, the carry will be set, and the computer will JuMP to function (the carry is set if the accumulator is equal to or larger than the value it is CoMPared with).

260 BCC crtl ; Branch on Carry Clear to crtl.

270 JMP function ; JuMP to function, the key pressed was a function key.

280 crtl CMP #27 ; CoMPare the accumulator with the value 27. Now we must make sure the key pressed is within the range 1-26. If it is greater than or equal to 27, the carry flag will be set.

290 BCS end ; Branch on Carry Set to end which JuMPs to the normal interrupt routine.

300 LDX #9 ; LoaD the X register with the value 9. There are certain keys we can't use, and we must make sure that one of these doesn't slip through.

310 loop CMP table,X ; CoMPare the accumulator with the value in the memory location table+X.

320 BEQ end ; If the accumulator equals one of the values in the table, end.

330 DEX ; DEcrement the X register, to point to another value.

340 BPL loop ; If the X register is positive, branch to loop. A positive condition is indicated by the seventh bit being clear. So when the X register DEcrements and becomes $FF, it will be negative, and this branch will no longer be performed.

550 TAX ; Transfer the contents of the Accumulator to the X register.

555 DEX ; DEcrement the X register. We do this because crtl-A returns the value one, and it is element zero in the table of commands.

560 gmult JSR mult ; Jump to SubRoutine to mult, which returns with the X register holding the index to the command table.

570 LDY #0 ; LoaD the Y register with the value zero.

600 print2 LDA comman2,X ; LoaD the Accumulator with the value from comman2+X. The moment of truth! This is where we put the selected command into the character buffer.

610 STA $277,Y ; STore the Accumulator in the character buffer, $277, plus the Y register.

615 INY ; INcrement the Y register, to point to the next position in the character buffer.

620 INX ; INcrement the X register, to point to the next character of the command.

630 CPX compare ; ComPare the X register with the memory location compare. The routine mult, which was called above, places the value originally contained in X register plus the length of the character in it.

640 BNE print2 ; If we're not finished, Branch to print2.

650 JMP other ; JuMP to other, which finishes off.

660table.byt0,5,8,9,13,14,17,18,19, 20 ; This is the table of characters we aren't using because they're taken.

700 function SEC ; SEt the Carry flag, ready for a Subtraction.

710 SBC #$85 ; SuBtract $85 from the accumulator with the carry. We must do this so that the correct index is set up to the table of commands.

720 TAX ; Transfer the Accumulator to the X register.

730 JSR mult ; Jump to SubRoutine to mult to calculate the index we need.

740 print LDY #0 ;LoaD the Y register with the value (#) zero.

750 loop2 LDA command,X ; LoaD the Accumulator with the command table+X.

760 STA $277,Y ; STore the Accumulator in the character buffer plus Y.

770 INY ; INcrement the Y register.

780 INX ; INcrement the X register.

790 CPX compare ; ComPare the X register with the end of the command.

800 BNE loop2 ; If we're not finished, loop2.

830 other INY ; This is the ending routine. INcrement the Y register.

840 STY 198 ; STore the Y register 198, the length of the character buffer.

850 JMP $EA81 ; JuMP to the last part of the original interrupt routine.

900 mult CPX #0 ; ComPare the X register with zero. This routine multiplies the length of the commands, which is 10, by the command number, held by the X register, to come up with the index to the table of commands.

910 BEQ cont ; If the X register is zero, we don't need to multiply anything.

920 LDA #0 ; LoaD the Accumulator with the value zero.

930 CLC ; CLear the Carry flag, ready for an addition.

940 add1 ADC #length ; ADd the length to the accumulator with Carry.

950 DEX ; DEcrement the X register.

960 BNE add1 ; If the X register isn't zero, add1.

970 cont TAX ; Transfer the Accumulator to the X register.

975 CLC ; CLear the Carry, ready for an addition.

980 ADC #length ; AD the carry and length to the accumulator, to determine the last character of the command plus one.

990 STA compare ; STore the Accumulator in the memory location compare.

999 RTS ; ReTurn from Subroutine.

**Here's the Command Tables:**

```
1000 command .asc "LIST    ":.byt 13 ; f1
1010 .asc "NEW     " ; f3
1015 .byt 13
1020 .asc "RUN     " ; f5
1025 .byt 13
1030 .asc "CONT    " ; f7
1035 .byt 13
1040 .asc "        " ; f2
1045 .byt 13
1050 .asc "         " ; f4
1060 .asc "        " ; f6
1065 .byt 13
1070 .asc "        " ; f8
1075 .byt 13
2007 comman2 .asc "        " ; a
2008 .byt 13
2010 .asc "        " ; b
2015 .byt 13
2020 .asc "        " ; c
2025 .byt 13
2030 .asc "        " ; d
2035 .byt 13
2040 .byt 0,0,0,0,0,0,0,0,0  ; e
2045 .byt 13
2050 .asc "        " ; f
2055 .byt 13
2060 .asc "        " ; g
```

```
2065 .byt 13
2070 .byt 0,0,0,0,0,0,0,0  ; h
2075 .byt 13
2080 .byt 0,0,0,0,0,0,0,0  ; i
2085 .byt 13
2090 .asc "        " ; j
2095 .byt 13
2100 .asc "        " ; k
2105 .byt 13
2110 .asc "        " ; l
2115 .byt 13
2120 .byt 0,0,0,0,0,0,0,0  ; m
2125 .byt 13
2130 .byt 0,0,0,0,0,0,0,0  ; n
2135 .byt 13
2140 .asc "        " ; o
2145 .byt 13
2150 .asc "        " ; p
2155 .byt 13
2160 .byt 0,0,0,0,0,0,0,0  ; q
2165 .byt 13
2170 .byt 0,0,0,0,0,0,0,0  ; r
2175 .byt 13
2180 .byt 0,0,0,0,0,0,0,0  ; s
2185 .byt 13
2190 .byt 0,0,0,0,0,0,0,0  ; t
2195 .byt 13
2200 .asc "        " ; u
2205 .byt 13
2210 .asc "        " ; v
2215 .byt 13
2220 .asc "        " ; w
2225 .byt 13
2230 .asc "        " ; x
2235 .byt 13
2240 .asc "        " ; y
2245 .byt 13
2250 .asc "        " ; z
2255 .byt 13
```

I hope you have fun working out which commands to put with which keys, and have fun linking the reset routine and this one together, plus a few others.

```
10 i=49152:ba=i:rem change the value of
i to relocate
20 read a:if a=256 then 100
25 c=c+a
30 poke i,a:i=i+1:goto 20
100 ifc<>14894thenprint"error in data
statements":end
199 goto210
200 h=int(b/256):l=b-h*256:return
205
b=ba+15:gosub200:pokeba+2,l:pokeba+
74,h
210
b=ba+82:gosub200:pokeba+33,l:pokeba
+34,h
220
b=ba+72:gosub200:pokeba+42,l:pokeba
+43,h
230
b=ba+110:gosub200:pokeba+52,l:pokeb
a+53,h
240
b=ba+210:gosub200:pokeba+57,l:pokeb
a+58,h
250
b=ba+13:gosub200:pokeba+65,l:pokeba
+66,h
260
b=ba+104:gosub200:pokeba+70,l:pokeb
a+71,h
270
b=ba+110:gosub200:pokeba+87,l:pokeb
a+88,h
280
b=ba+130:gosub200:pokeba+92,l:pokeb
a+93,h
290
b=ba+13:gosub200:pokeba+130,l:pokeb
a+131,h
295
b=ba+13:gosub200:pokeba+100,l:pokeb
a+101,h
300 dimfc$(33)
310 fc$(0)="      "+chr$(13):rem f1
320 fc$(1)="      "+chr$(13):rem f3
330 fc$(2)="      "+chr$(13):rem f5
340 fc$(3)="      "+chr$(13):rem f7
350 fc$(4)="      "+chr$(13):rem f2
360 fc$(5)="      "+chr$(13):rem f4
370 fc$(6)="      "+chr$(13):rem f6
380 fc$(7)="      "+chr$(13):rem f8
390 rem ctrl keys
400 fc$(8)="      "+chr$(13):rem a
410 fc$(9)="      "+chr$(13):rem b
420 fc$(10)="     "+chr$(13):rem c
430 fc$(11)="     "+chr$(13):rem d
440 fc$(12)="     "+chr$(13):rem e
450 fc$(13)="     "+chr$(13):rem f
460 fc$(14)="     "+chr$(13):rem g
470 fc$(15)="     "+chr$(13):rem h
480 fc$(16)="     "+chr$(13):rem i
490 fc$(17)="     "+chr$(13):rem j
500 fc$(18)="     "+chr$(13):rem k
510 fc$(19)="     "+chr$(13):rem l
520 fc$(20)="     "+chr$(13):rem m
530 fc$(21)="     "+chr$(13):rem n
540 fc$(22)="     "+chr$(13):rem o
550 fc$(23)="     "+chr$(13):rem p
560 fc$(24)="     "+chr$(13):rem q
570 fc$(25)="     "+chr$(13):rem r
580 fc$(26)="     "+chr$(13):rem s
590 fc$(27)="     "+chr$(13):rem t
600 fc$(28)="     "+chr$(13):rem u
610 fc$(29)="     "+chr$(13):rem v
620 fc$(30)="     "+chr$(13):rem w
630 fc$(31)="     "+chr$(13):rem x
640 fc$(32)="     "+chr$(13):rem y
650 fc$(33)="     "+chr$(13):rem z -
note 'z' can only have 6 characters
700 i=ba+130:fora=0to33
705 forb=1tolen(fc$(a))
710 pokei,asc(mid$(fc$(a),b,1))
720 i=i+1:next:next
24576 data 120,169,15,141,20,3,169,96
24584 data 141,21,3,88,96,10,0,32
24592 data
159,255,173,119,2,201,141,144
24600 data 3,76,49,234,201,133,144,3
24608 data
76,82,96,201,27,176,242,162
24616 data
11,221,72,96,240,235,202,208
24624 data
248,170,202,32,110,96,160,0
24632 data
189,210,96,153,119,2,200,232
24640 data
236,13,96,208,243,76,104,96
24648 data 0,5,8,9,13,14,17,18
24656 data
19,20,56,233,133,170,32,110
24664 data
96,160,0,189,130,96,153,119
24672 data
2,200,232,236,13,96,208,243
24680 data
200,132,198,76,129,234,224,0
24688 data 240,8,169,0,24,105,10,202
24696 data
208,251,170,24,105,10,141,13
24704 data 96,96,256
```

■

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# Adventurer's Realm

by Michael Spiteri

**HELLO, WELCOME TO THE REALM** - Australia's only Adventure/ Strategy Column for all Commodore computer users.

The letters have not stopped rolling in. This means, I'm afraid, you might have to wait a little longer for a reply.

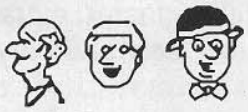
The address to write to concerning absolutely anything regarding adventure games is:

**Adventurer's Realm**
**1/10 Rhoden Court**
**North Dandenong**
**Vic 3175**

Please allow 28 days for a reply. Always enclose a stamp if you want a reply.

If you wish to write to Barry Bolitho regarding Strategy Games, please mark the envelope "Strategy Section".

## Chitchat



Norman Davey of Wilson, WA is having problems with the new package deal from Melbourne House which included *Lord of the Rings*, *Shadows of Mordor* and *The Hobbit*.

Apparently only the *Shadows* disk would work, and even then he has to enter Open 15,8,15"I":Close 15. He returned the games to SLM and he hasn't heard a reply since. I also discovered that SLM are not in Melbourne any more and have moved to a new branch in Sydney.

Has anyone else had any problems with this 'Package Deal'?

Chris Coombes of Beechwood, NSW writes. "In the complaints section of the May ACR someone said *Bard's Tale* was pretty poor. I agree. It is pathetic. Very repetitious dungeons and towns."

**MS**: *Another black mark for Bard's Tale.*

Many people have been writing in regarding the game *The Last Ninja*. Please don't. It isn't an adventure game. Try writing to the Sydney offices, and they'll see that you get your problems published in a more appropriate section of the magazine.

Christine Simms is having difficulty locating *Adventure Construction Set* by Electronic Arts. She wrote to the UK to order it but unfortunately she lost her money when the company mysteriously disappeared. Does anyone know where she can find this game?

Christian Murfet from Tassie would like to swap original adventure games (only for a month or so). If you can supply *Guild of Thieves* or *Dracula*, write to Christine at 59 Hunter St, Queenstown, Tas 7467

The Australian Adventure Masters reply to Chris Coombes comment about their comment on *The Pawn* (June Realm).

"Different people have different tastes, there is no account for it. I never meant that *The Pawn* is a bad game - I just think that it doesn't deserve all the publicity that it got (overrated). On the other hand, if I had an Apple II I would think any game is game (if you get my drift).

*MS: Ahem. Fortunately, for Adventure Masters sake, not many Apple II adventurers read ACR.*

## New Releases

"Graphics more stunning than both *Jinxter* and *Guild of Thieves*" claims the new press release from Rainbird regarding one of their latest releases. The name of the game is *Corruption*. In this game you are plunged headlong into the shark-like world of high finance where commercial intrigue and double dealings are commonplace.

Then there is *Fish*, Rainbird's other release. You take the role of a humble goldfish who has to save the world from his little fish bowl. Interesting eh? Soon to be available from Questor.

*Sherlock* is the latest Infocom classic. You take the role of Doctor Watson in this thrilling and intriguing text adventure. Also available from Questor.

## Realm's free hint sheets

Send away now for your free hint sheets (enclose stamped addressed envelope). Only ask for the hint sheets that you really need.

Thanks to all of you who sent in your hint sheets for all to share, they include. David McKinney, Jason Butler, Kamikaze Andy, Ian Ray and Andrew Hansen.

## New hint sheets

*Kabyashi Naru, ZZZzzzz, Adventureland, Pirate Adventure, Faery Tale, Bard's Tale* (5 pages - only desperate Barders please.), *Borrowed Time*. Plus the oldies.

*Zork 1,2,3, Hitchhikers Guide, Never Ending Story, Hobbit, Hamstead, Lord of Rings, Castle of Terror.*

## Zorker of the month

A character called Kizz wins this month's award for being the most painful Zorker. Kizz not only asked for hint sheets, but also three and a few Zork questions as well. The cheek of it.

# Troubled adventurer's department

Boy. Australia and Tasmania has been very busy during the months of June and July getting stuck in numerous adventure games. If any dudes out in Clever Clever Land can help out these pitiful adventurers, then write to the Realm as soon as possible. Thanks.

We'll start the ball rolling with G.A Hockey of Wheelers Hill in Vic land who is stuck in a huge number of games.

***Deja Vu***: What items are required to complete the game?

***Uninvited***: How do you obtain the key from the little man who floats across the screen?

***Arazok's Tomb***:

a) Can't get past the snake.

b) Can't enter travel tube.

c) Can't operate TV screen.

***Wrath of Nikademus***:

a) Cannot get egg from viper.

b) Cannot find key to dark castle.

c) Cannot enter the room left of Dwarf's burial ground.

Scott Bullock of Alexandra Hills in QLD is one of the many adventurers stuck in ***The Pawn***.

"What do I buy off Honest John? Also, where do I get some light so I can explore the tree in the Dark Forest. And how do I get past the guards into the Golden Palace (*MS: I think you have to give them a note.*)."

Pauline Lowrey of Ingle Farm is stuck in ***Never Ending Story***. She wants to know how to get Atreyu to put on the Auryn.

Adam is trying to find the eye to gain the Master Key in ***Bards Tale***.

B.Ross, busy doing David Bowie impressions, is stuck in ***Labyrinth***. He wants to know how to get out of the wise man's garden.

George Axam of Wynnum in QLD is having great parmucles in ***Ring of Power***.

Having climbed up a beanstalk he attempts to kill a dragon but is told he is out of reach. However, when he moves on, the dragon steals his sword ('fraid Aussie police cannot help in this one.)

Can anyone help George out of his dilemma?

Ian Ray is another one of those adventurers who play numerous games at a time and end up getting stuck in numerous problems at a time.

Firstly, Ian is stuck in those really yuckie talkie adventure games.

***Ninja Adventure***: How does he get past the ninja at the Altar?

***Alien Adventure***: Is it possible to get past the checkpoint.

Finally Ian is stuck in a not so yuckie game - ***Catacombs***: How on earth does he get past the huge boulder that blocks his path?

Chris Coombes is stuck in ***The Pawn***. "I have got the blue key and freed the Princess but the ice collapses under out combined weight." Quite a serious parmucle Chris has there. Any takers?

David Couche would like to know if anyone knows what the access code is in ***WarGames***.

Another person stuck in ***The Pawn*** is Paul Robinson (*MS: Nothing to do with Neighbors*). Paul has found a blue key but does not know what to do next.

Another David Bowie impersonator is Anne Barnes of Monash, ACT. She is having problems getting into the Castle of the Goblin King in the game ***Labyrinth***. Any helpers?

Adeline Cox of Devonport in Tassie is stuck in African Safari. How on earth does she move the paddle.

We seem to be going backwards in ***The Pawn***. Stephen Carney of Brisbane has come across the blue key but does not know how to pick it up. (*MS: The answer was printed in the May Realm. You have to move the pedestal and look in the niche.*) Also, how do you pass the dragon and what do you do in the paper room?

Andrew Hansen is stuck in ***Bards Tale II***. "I am at a complete loss as to what I should do in the fourth Death Snare - what is the value of rote actions?"

Allan Clayton wants to know how to get to the Snow Topped Mountains in ***The Pawn***.

Bradley Wynne of Ballarat in Vic wants to know what "A slab through the shed will lighten your journey. Refills in the sewers." is supposed to mean in the game ***Pub Quest***.

Another person stack in ***Labyrinth*** is Roy.

a) How do you get out of the secret corridor?

b) What is the rock video Fiery refers to in the Forest?

William Fang is stuck in a couple of games.

***Uninvited***: How do you catch the Red Demon? How do you get rid of the large tomato type thing in the maze? How do you reach the light in the bathroom?

***Guild of Thieves***: How do you get into the bank? What do you do with the antimatter cube? What is the opening combination the dice has to be rolled?

Finally, Joanne Green is having great difficulties in ***Bard's Tale II***. She seems to be stuck in Sub-Level 2 (Starter dungeon in Trangamayne). Joanne sent me in some maps that shows where she is stuck. If anyone can help, please write in.

# Smart adventurer's department

Okay. If your problem was printed in the Realm a few months back, then there is the possibility the solution is here. Many thanks to all those generous and smart adventurers who went to the trouble of helping these pour restless souls.

**Game**: *Guild of Thieves*
**For**: Suzanne Parkes
**From**: William Fang and Jason Oakley
**Problem**: Coloured squares in Black Square Room
**Help**: The squares must be stepped on in the following order: violet, indigo, blue, green, yellow, orange, and then red. To cross from the Black Square to the White, you must travel se.n.e.e.se.sw.e. To get from White to Black go nw.n.nw.e.sw.sw.sw.nw.n.

**Game**: *Uninvited*
**For**: Bill Beggs
**From**: William Fang and Mark Williams
**Problem**: The Lady
**Help**: To get rid of the Lady you must go towards the stairs from the hall. Then you must enter the storage closet, and get the no-ghost bottle. Open the bottle and back to the hall. You can operate the no-ghost on the Lady.

**Game**: *Bard's Tale*
**For**: Owen Wallace
**From**: William Fang and Aussi Adventure Masters and Andrew Hansen
**Problem 1**: How do you enter Kylearan's Tower?
**Help**: You must have the eye from Dead King Aildrex (in lowest level of Mad God's Temple) and find Mad Dog's statue (top level). The eye will bring the statue to life, and you must fight and defeat him.
**Problem 2**: What is the significance of the Silver Square?
**Help**: You need the silver square, circle and triangle to pass a special door in Magar's Tower.

**Game**: *Faery Tale*
**For**: Gino Ferraro
**From**: William Fang and Mark Williams and J. Stephen
**Help**: The fifth statue is in the Tombs of Hemsath. You will need a rope to cross the lava and a crystal shard to cross the energy barrier at the Citadel. The wand is like the bow with unlimited shots. The blue stones are used to transport you from one stone ring to another, and the shell is used to call up the turtle when you are near the ocean.

**Game**: *Spiderman*
**For**: Don Davidson
**From**: Michael Walsh and Adv Masters
**Help**: To get up the lift try Enter Shaft, and if you want to get to the very top do some directional pushing.

**Game**: *Lord of the Rings Ptl*
**For**: John Fulton
**From**: M.Walsh and J.Stevens
**Help**: Use Merry to get the elfstones from the lake (swim or enter).

**Game**: *Kentilla*
**For**: Gunars Berzins
**From**: Aussi Adventure Masters
**Help**: To open the chest you need the gold key from the bedpost but it has to be turned into iron.

**Game**: *Rebel Planet*
**For**: Gunars Berzins
**From**: Aussi Adventure Masters
**Help**: User sewer cover in booth, insert card then disk.

**Game**: *Red Moon*
**For**: John Forsythe
**From**: Aussi Adventure Masters
**Help**: To go under water you have to carry flask, tubing, and wear mask.

**Game**: *Colossal Adv*
**For**: John Forsythe
**From**: Aussi Adventure Masters and Roy and David Couche
**Help**: To get pyramid out, go inside brick building and then light lamp, say plugh and say plover. Then go ne and take pyramid. Return to Plover room and then do the reversal of the above magic words.

To get past the spider you must first have the pentacle (bottom of Spiral Stairs). Once you are in the room with the spider, go back outside the stairwell and up to the pinnacle. The spider will follow. Then throw the pentacle.

**Game**: *Moebius*
**For**: Richard Chan
**From**: Owen Proudfoot
**Help**: The aim in the "powers of the mind" section of the game is to keep the moving black and white ball contained inside the rectangle. (*MS: Hold it. Doesn't sound to adventurous to me? Sounds like an arcadian sneaking through.*)

**Game**: *Ring of Power*
**For**: David Lear
**From**: George Axam
**Help**: To lift the boot you have to drop cork. This will fill the hole but before sailing, fill the empty wine bottle with water.

**Game**: *Holy Grail*
**For**: Anybody.
**From**: Scott Bullock
**Help**: To get past the French guard in Camelot just have the baseball glove but make sure you have the wooden wedge or you'll be stuck in the throne room.

**Game**: *Terramex*
**For**: Anyone stuck
**Help**: Write to Paul Schnell, 31 Clackmannan Road, Sydney, NSW 2153. ■

## Realm database via bulletin boards

If you own a modem you can have access to the Realm's database via the Down Under BBS, located in NSW. The number to ring is (02)674 6647.

If you operate a BBS in States other than NSW, maybe you might be interested in making your BBS an exclusive Realm help centre for your state. Write to the Realm for more info.

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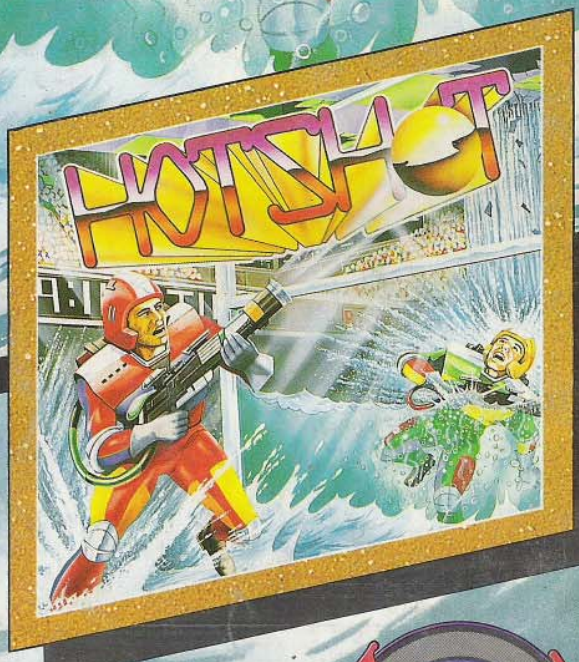


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